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JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

by John Ferguson

A few additional thoughts on Crepe Murder:

1) To help our crepe myrtle trees recover from the abuse and stress of crepe murder we need to fertilize them. When fertilizing only use organic fertilizers. Artificial fertilizers produce fast weak growth that actually attracts insect pests from scale to aphids.

2) Always keep crepes mulched for healthier trees, especially in this recovery stage. A composted (aged) native mulch works best. A three-inch-thick layer at least out 3-4 feet from the trunk. Do not let the mulch touch the trunk of any tree, always leave an air gap. The mulch moderates soil temperatures and evens out the moisture in the soil, reducing tree stress helping them recover.

3) Super Seaweed from Microlife as a foliar spray will help the new growth strengthen up quicker and discourage aphids, scale, white flies, etc.

4) Scattering a little fire ant bait around tree is also useful. Fire ants love the honeydew produced by these insects hence they will protect them from beneficial insects trying to eat these insect pests.

5) A couple cups of trace minerals (Re-Mineralizer) around the base of the tree would be beneficial if it has never been done. Trace minerals are to plants as vitamins are to humans, we don' t need a bunch but if they are not there, one is not as healthy as one could be (same for plants). Works best if they are placed down before mulching.

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I often enjoy a dark beer in a frosted mug while grilling during the summer evenings. This week I read an article in Frontiers of Sustainable Food Systems (2021). This paper was on the use of recycling waste products from the brewing of beer like rapeseed cake and beer bagasse (spent beer grains) on agricultural crops.

These waste products were incorporated into the soil along with some fresh cow manure. Not only did organic matter and nutrients in the waste promote the growth of beneficial micro-organisms, it increased yields by 15%. Additionally, it caused a significant reduction in galling from root knot nematodes.

Maybe to help farmers out we should consume more beer.

The British journal Ecological Solutions and Evidence (2021) recently had another article on the values of recycling organic waste. For every two tons of commercial coffee produced there is one tone of coffee pulp produced.

This test was an experiment in regeneration of trees in Costa Rica. The test area had been stripped of trees and intensively farmed for decades, hence had severely degraded soil. They placed a 20-inch layer of the pulp over the ground. This technique greatly speeded up forest recovery and reduced invasive grasses that were preventing forest recovery.

Speaking of coffee, there is new study underway on coffee wilt disease that was published in the journal BMC Genomics (2021). Back in the 1920's this disease infected many varieties of coffee. By finding resistant cultivars and through selective breeding, coffee strains that were resistant were developed. However new fungal strains have developed that only attack certain varieties of coffee.

By reactivating a frozen sample of this old pathogen, they could study how it has changed over the decades. They discovered that this new version of the disease now had genes from a banana disease known as *Fusarium oxysporum f. sp. Cubense,* that is closely related. Coffee and bananas are often grown together as coffee plants like the shade provided by the bananas.

By studying how the fungus changed they hope to provide new treatment techniques.

More and more people are suffering from resistant fungal infections. A paper in the journal Environmental Health Perspectives (2021) has found one of the causes.

These infections have been linked to a class of chemical fungicides in the "triazole" family. Triazole fungicides are used both in medicine and in agriculture.
As a result, these pathogenic fungi are becoming resistant.

More reasons to grow or purchase organic produce and be part of the solution instead of part of the problem. If people would not purchase the chemically contaminated, nutrient deficient produce in growcery stores would not sell it, and farmers would change how they grow food.

The journal Nature Communications (2021) has found that the surge of nitrogen into the oceans has caused major changes in the growth of the seaweed called sargassum.

They found the excess nutrients from artificial fertilizers, sewage sludge, and waste water treatment plants discharge, has turned the seaweed from a beneficial nursery habitat into harmful algae blooms. "This is causing catastrophic impacts on coastal ecosystems, economies, and human health".

Scientists continue to learn about the importance and interactions of microbes. A study published in the journal PLOS ONE (2021) has found a symbiotic relationship between algae and bacteria. They found that algae depend on B-12 produced by bacteria and in return the bacteria get carbon produced by algae (from CO_2) obtained from the atmosphere.

The journal Science (2021) had another example of microbial partnerships. Plants fall into two broad categories called vascular (having stems and roots) and non-vascular like mosses.

We know that most vascular plants live in a symbiotic relationship with fungi in the soil. By studying the moss *Marchantia paleacea* they discovered a lipid transfer between the moss and the fungi.

This means that the common ancestor to both groups of plants that colonized dry land millions of years ago, must have exchanged lipids also.

When I read something like this the biblical verse "…study nature and let it teach you" always comes to mind.

A study by several universities from Europe to Africa published in the journal Nature (2021) has found that minor and micronutrients in cereal grains varied a lot depending on where they were grown.

These micronutrient deficiencies lead to what the study defined as "hidden hunger" which were found to be very common. They concluded that "micronutrient deficiencies pose a serious risk to human health, including the growth and cognitive development of children and susceptibility to infectious and non-communicable disease".

We have seen this in the pandemic, as multiple studies have linked the susceptibility and severity of covid directly to poor nutrition especially micronutrients. As gardeners we need to grow more of our own fruits and vegetables organically and use rock dust products like re-mineralizer to ensure the trace, micro- and pico- elements are in the soil.

More and more medical doctors, nutritionists, soil scientists, etc. are now linking most of our health problems to the poor quality of our food supply. The website below has a lot of information on the importance of getting these needed minerals (elements) back into our soils.

www.remineralize.org