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## JOHN'S CORNER:

### NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

*by John Ferguson*

In this month's Tree Care Industry magazine, there was an interesting article on why some trees produce large fruits or seed pods. It also explained why some trees like the Honey Locust produce very large sharp spines. "What do trees like the Honey Locust ( *Gleditsia tricanthos* ), Pronghorns ( *Antilocarpa americana* ), have in common? Why do Osage Orange ( *Maclura pomifera* ), Paw Paw ( *Asimina triloba* ), Kentucky Coffee trees ( *Gymnocladus dioicus* ), and Avocado trees ( *Persea americana* ) put so much energy into producing such large seed packages that fall to the ground and rot?" Researchers have found that the traits evolved because of browsing by now extinct large animals called Mastadons and other large mammals. These large fruits evolved to attract these animals which ate them and then scattered the seed in their manure (a plant propagation strategy) as they roved around. However, the trees did not want the fruits eaten until the seeds in the fruit were ripe hence the plants developed different techniques to prevent animals from grazing on them. Some trees will not produce fruits until they are 7-10 years old and tall enough that the fruits are too high for the animals to reach. Other trees like the honey locust produce the large strong thorns starting at two feet above the ground up to 12 feet or so. This prevented the Mastodons from just pushing them over to get to the seed pods. I started reading a new book this morning called "Ghosts of Evolution" on this subject.

As many of you know I studied physics as part of both my undergraduate and graduate work. I found this new study from Duke University very interesting as it explains how physics governs the evolution of social organizations into larger and more complex communities. These same laws of physics gives rise to a scientific explanations to how tree branches grow or river deltas form, this is a concept called the constructal law. This law states that for a system to survive, it must evolve over time to increase its access to "flow". We see this all across nature from the human vascular system to modern highway and road networks, to river systems and tree branches. Living organisms have a tendency to organize themselves into increasing larger and complex societies. Gardens that have been designed with this concept have less problems, grow better and consume less resources as it copies nature. International Journal of Energy Research 2018.

We have talked about the dangers of GMO (Genetically Modified Organisms) many times. Due to the health and environmental hazards many countries will not allow GMO plants to be grown or even shipped



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into the country. These include France, Germany, Austria, Poland, Greece, Switzerland, Ireland, Scotland and Wales. Russia also forbids GMO and is in the process of converting all its agriculture to organic methods.

The results of some new studies on Round Up (glyphosate) were published in the Pulse of Natural Health Newsletter (June 2018). In animal studies that consumed GMO soy or corn, the animals became unable to reproduce by the 3rd generation. The "inert" ingredient in Round-Up called POEA (polyethoxylated tallow amine) has been found to be 1,200-2,000 times more toxic to human cells than the active ingredient glyphosate. Also this week a California court has found Monsanto the maker of Round-Up falsifying safety data and has awarded a \$289 million to a plaintiff with cancer caused by Round Up exposure. The reasons to use organic methods in gardening and agriculture continue to increase.

For those interested, the Environmental Working Group (EWG) has paid to have many common cereals tested for this toxic chemical, since the EPA, USDA and FDA will not do it. The results can be found at: <https://www.ewg.org/childrenshealth/glyphosateincereal/#.W3WIMsJOnDA>

A while back when we were studying minerals we discussed the dangers of mercury (Hg) in soils. Another source of mercury contamination has been identified, sewage sludge or the politically correct name biosolids. It turns out that one of the sources of this mercury is from vaccines. For example, the FDA allows the flu vaccines to contain **25,000 more times** the mercury than the EPA allows in drinking water. The mercury not absorbed by our bodies comes out in our manure (feces). This is another reason to avoid compost made with biosolids for ones yard and gardens. It has its place but not in our yards and gardens.

A study published in the Journal of Nutrition has found that walnuts play a role in heart health and in reducing colorectal cancer. Eating walnuts changed the gut microbiome and reduced LDL-cholesterol levels. The research suggests that it is these changes to the guts microbiome, that caused these benefits. It reinforces the old adage "You are what you eat".

As gardeners we spend a lot of time in the sun that leads to the production of vitamin-D which is essential for good health. At the same time too much sun (e.g. sunburn) can cause skin cancer. The University of Sydney found that the vitamin B-3 (Niacin) can prevent melanoma (skin cancer) and help repair DNA damage from ultraviolet light from the sun. A few foods naturally high in niacin are wild caught fish like tuna, mushrooms, organically grown peanuts, avocados, and green peas.



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A study from the Harvard Medical School states that neglecting to get proper micronutrients "virtually guarantees disease". As we discovered in our study of the elements last year hundreds of human health problems are caused or aggravated by trace and micronutrient deficiencies. This is why it is becoming so important to grow our own food (fruits, vegetables, herbs) organically using heirloom varieties that have a high nutrient density. One of the things I do personally in my yard and garden as well as my farm, is apply trace minerals to everything I grow. I have found that a mix of 60% greensand, 20% granite sand, and 20% basalt sand provides all 79 elements found in the human body. I apply 40 pound per 1,000 square feet every 4-5 years as it is extremely cheap insurance against plant or human health problems. If these minerals are not in the soil, then the microbes cannot release them, hence plants do not absorb them and they are not in our food.

On the website (<https://www.mercola.com/>) he has an excellent guide to antioxidants "The Ultimate Guide to Antioxidants" that can be downloaded free. In that guide one method of getting antioxidant results is by walking barefoot on the soil, a process called "grounding or earthing". It allows one to absorb large amounts of electrons (which have a negative charge) through our feet. The same benefit occurs when we plant or dig into the soil with our bare hands (another benefit of being a gardener). I cannot remember how many times over the years when showing a good compost or soil to someone that they would say "this even feels good". They could sense the health benefits.

One of the major insect pest control methods along with spiders is birds. A study in the Journal The Science of Nature has found that birds eat between 400-500 million tons of insects each year! These include beetles, flies, aphids, grasshoppers, crickets, arthropods and many more. Without birds to keep insects in check there would be no forests or food for us. The toxic agricultural chemicals are killing millions of birds each year. When birds eat the poisoned insects they get sick or die and if a cat or dog then eats the bird they often get sick or die.

When I am walking around in the garden one of my favorite things to do is brush/shake plants with fragrant foliage. One of my favorites is Spearmint, from just the aroma to having it crushed up in a glass of ice tea on a hot day. A recent article in Life Extension (August 2018, pp 24-30) compiled from 17 published studies that this herb has many health benefits. Tea made from this mint boosts mental focus, attention, and concentration while supporting restful sleep at night. The new data suggests "that spearmint polyphenols may promote neurogenesis (the growth of new brain cells), while protecting existing neurons and boosting neurotransmitter levels."