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JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

by John Ferguson

There is an exciting branch of plant research going on that discovered plants produce small membrane wrapped spheres called vesicles encased in a larger membrane. We have known for some time that mammals and even fungi produce these vesicles called exosomes. It is believed that these vesicles are how plants send out defensive compounds to protect themselves against pathogens. For example, when a pathogenic fungus tries to infect cells in the wall of a plant, the plant sends out these spheres to deliver molecules to reinforce the cell wall. These vesicles may also penetrate the fungal cell and carry defensive proteins that disrupt the transmission of fungal proteins. Once established inside a fungus's cells they deliver complex molecules that are anti-fungal.

A study in Sweden published in the Journal of Landscape Ecology found that for pollinating butterflies, it is important for them to be close to forests rather than agricultural fields. They examined 32,000 butterflies from 77 species while studying how landscapes affect the butterflies. When grasslands were surrounded by forests there were higher density of butterflies and increased number of species. This study reinforces many of the modern ideas on how to landscape our yards and gardens. An excellent book on the subject recommended for all gardeners is: "Bringing Nature Home - How You Can Sustain Wildlife with Native Plants", by Douglass W. Tallamy, Timber Press, 2014, Edith Printing, ISBN-13: 978-0-88192-992-8.



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A study in the Journal Genome Research (2019) has found drug resistant pathogens in the waste water from sewage treatment plants. These drug resistant strains were being released into the environment from the waste water discharge or when used for irrigation (purple pipe). The counts of these pathogens were higher if there is hospitals sewage going to the treatment plant. Using ultra violet light as an additional treatment significantly reduced these pathogens but is seldom used. This is another reason for gardeners to avoid products made from biosolids (sewage sludge cake).

Here is another reason to grow one's own vegetables or purchase from a local farmers market. Farmers are using wastewater from the oil industry's fracking technology to water vegetables both conventional and organic. Fracking waste water often contains benzene a known carcinogen, heavy metals like lead, numerous petrochemicals and even radioactive elements like radium. There are also dozens to hundreds of unknown chemicals used that the industry refuses to release as they are "trade secrets".

One of the newsletters I subscribe to had an article on a common garden insect (actually a crustacean) often known as "rollie pollies" or "pill bugs". They feed on dead organic matter and have many types of microorganisms in their guts to help them process the organic matter which greatly helps speed up the decomposition process. They also eat several species of bad fungi and help cycle the nutrients back into the soil. Another benefit of these creatures has been discovered. They have the ability to take in heavy metals like lead, arsenic, and cadmium and crystalize these metals in their guts into a form that is inert in the environment and cannot do any harm. They can survive in sites heavily contaminated with toxic metals and help clean it up. Note: If there is not enough decaying organic matter, they will eat tender shoots.



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The health newsletter from Dr. Mercola had a recent article on the link between our health and gardening and agriculture “Degeneration Nation: GMO’s, Toxic Chemicals and Factory Farms”. <https://articles.mercola.com/sites/articles/archive/2019/03/19/degeneration-nation.aspx>

I do a lot of gardening for wildlife both at my home and at our farm near LaGrange. I recently finished reading a book with a lot of good information on many of the bird species found in Texas. “The Upland and Migratory Game Birds of Texas”, multiple authors, Texas A&M University Press, 2017, ISBN: 978-1623494988. It covers many things from the type of shelter they require to foods that they eat. It is a good reference for anyone whom wants to increase the number of birds on one’s property by defining which plants they need to have to attract a certain species of birds.

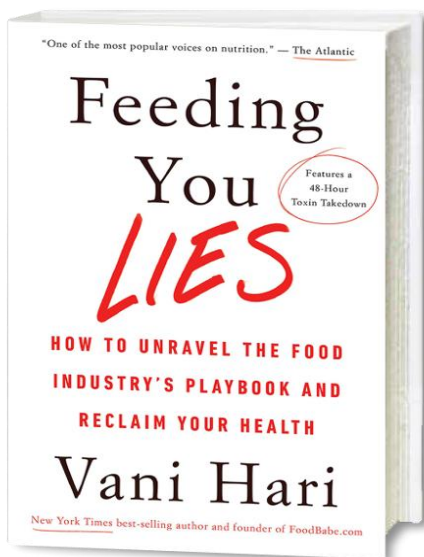
For those of us whom love coffee I read an article in the journal Science Advances (January 2019) on coffee plants. Of the 124 known wild species it was found that 75 (60%) are now in danger of extinction. This is important because wild organic shade grown coffee has many health benefits while the hybridized varieties that grow in full sun to increase yields no longer provide the health benefits.

Now that the wall of invulnerability around Monsanto has been broken more research reports are being published. A study in the Journal Mutation Research (2019) by the University of Washington has found that exposure to glyphosate the active ingredient in the herbicide Round Up, increases the risk of all cancers and some cancers by 40%.

Independent testing by the organization “Friends of The Earth” has found that all oat cereals have glyphosate in them. They also found that pinto beans 4.5 times more than the EWG’s benchmark for lifetime cancer risk.

Researchers at Oregon State University and the U.S. Geological Survey have found that some tree species “eat” rocks. They found that red alder in a symbiotic relationship with microbes uses bacteria to fix nitrogen from the atmosphere and dissolves rocks releasing elements like calcium and phosphorus. This process accelerates rock dissolution releasing more minerals to help trees and plants grow. Which will eventually help form rich fertile soils. Proceedings of The National Academy of Sciences (2019).

I was called for jury duty recently and while waiting in the jury assemble room, I read an excellent book on the issues with our food supply. **“Feeding You Lies – How to Unravel the Food Industry’s Playbook and Reclaim Your Health”**, by Vani Hari (a.k.a. The food Babe), 2019, Hay House Publishing, ISBN: 978-1-4019-5454-3 As the title suggests she goes discusses many common products produced by the food industry and how they are designed to be addictive and make us fat, creating hundreds of health problems in the process. This book is for anyone concerned about the health of their children and family. More information can be found on her website at www.foodbabe.com



This book gives hundreds of reasons we need to grow as much of our own food (fruits and vegetables) as possible or at least buy from local farmers markets.