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JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

by John Ferguson

A study published in the journal AOB Plants (2015) has found that when plants of different populations were planted together that the total biomass yield was 30% more than, if only plants of the same population (species) were planted together.

They also found that the roots of the same plants were shorter in the same population. This suggests that there is some kind of detection and avoidance mechanism in place for plants of the same species. This lends evidence to what Organic gardeners have sworn for years, that when they have many different species of plants they grow better and have less insect and disease problems, use less water and require less fertilizer.

A study published in the journal Nature Chemical Biology (2016; 12 (6)) shows that fungi and plants developed biosynthetic pathways for complex molecules. One well-known group of these plant metabolites are the isoquinoline alkaloids. Today there are over 2,500 different types that have been identified. An example is the Poppy and barberry plants where we get the painkillers morphine or the cough remedy codein. The researchers discovered a new linkage mechanism for carbon atom transfer in fungi, which had never been seen before. This pathway appears to be a combination of plant biosynthetic principles and the non-ribosomal peptide synthetases commonly found in fungi. When a gardener uses toxic chemical fungicides we kill the fungi and we loss these benefits to our plants and the nutrition they provide.

A study in the journal Scientific Reports (2016; DOI 10) have found how plants such as stinging nettle protect themselves. The mineral calcium phosphate is used to provide the necessary bite to the stinging hairs of the rock nettle family. This same mineral is used in the bones and teeth of animals. This fibrous cellulose material is structurally similar to reinforced concrete and is densely incrustated with tiny crystals of calcium phosphate. Our native stinging nettles have stinging hairs hardened by glass-like silica (quartz).



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The Pesticide Action Network has published a report summarizing all the research on pesticides and how they are harming our children, "Kids On The Frontline." It is very scary what commercial toxic chemical agriculture is doing to our children. One can read or download a copy of the report at: <http://www.panna.org/resources/kids-frontline>

Another study published in the journal EBioMedicine (2016; DOI:10) titled "Systems Nutrigenomics Reveals Brain Gene Networks Linking Metabolic and Brain Disorders". They found a range of diseases (diabetes, cardiovascular, Alzheimer's, attention deficit disorder and others) linked to the cheap fructose sweetener used in many products from the corn plant. They found hundreds of genes are damaged by fructose. They found most Americans consume about 27 pounds of high fructose corn syrup in 2014.

A study from The University of Washington published in the journal PLOS ONE (2016; 11 (5)) titled "Variable Nitrogen Fixation in Wild Populus". Multiple studies are showing that bacteria in and on our bodies are vital for human health, influencing nutrition, obesity, and protection from diseases. We are only beginning to study how important the microbiomes of plants are. They found that Poplar trees growing in rocky inhospitable soil harbor bacteria within them that provide valuable nutrients. This is the first direct evidence that nitrogen fixation can occur in the branches of trees, with no root nodules required.

Vertical gardens are becoming more popular. The book "The Vertical Garden" by Patrick Blanc has many great photographs. A new trend emerging is vertical forests. The Mountain Forest Hotel in Guizhou, China's Wanfeng Valley is a sky-high marvel created by Milan-based architect Stefano Boeri. The trees capture carbon and help clean and cool the air along with many other environmental benefits. For more information: <http://ecowatch.com/2016/06/01/mountain-forest-hotel/>