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## **JOHN'S CORNER:**

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

*by John Ferguson*

I finished reading a new book a few weeks ago titled "Compost Utilization In Production of Horticultural Crops", CRC Press, 2021 ISBN 978-081536646-1.

The authors bring up an important point that I see every day talking with customers, and it deals with the use of fertilizers, either too much, too little or the wrong type.

The book mentions that excess artificial fertilizers cause an increase in pest and pathogen levels. Additionally, artificial fertilizer reduction also reduces disease pressure.

Note: In past issues we have talked about how artificial fertilizers create fast weak growth which makes plants more susceptible to insect and disease issues.

A couple other tidbits of information are: 1) A sports complex of 44 acres of soccer fields saved \$38,000 per year by top dressing the turf with compost. 2) It also reduced water requirements by 83% saving 2.5 million gallons of water per year. 3) It reduced reseeding requirements saving additional costs in seeds and labor.

Another reason that quality compost is called "Black Gold" by experienced gardeners.

**We** all know that plants compete for sunlight. Similarly, plants change how they use underground resources when they are planted alongside other plants.



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Plants make two types of roots: fine hairs that absorb water and nutrients from the soil and coarse roots that transport these substances back to the plant. A plants investment in different types of roots requires the evaluation of both the total volume of roots and how these roots are distributed throughout the soil profile.

So, do plants keep their roots directly below the plant or do they send roots out horizontally to collect nutrients from the adjacent soil which has competition from adjacent plants.

Researchers at Princeton University discovered that it depends on how close together they are. If planted close together plants are more likely to invest more in their root systems and try and out compete its neighbors for the limited soil resources. They would invest more roots below the plant and less horizontally.

This confirms the old gardening wisdom that states do not plant plants too close together. Journal Science, 2020

**As** gardeners we all know that the quality of soil greatly effects the flavor of foods. For example, in wine culture it is widely known that the region where the grapes are produced gives each wine its own terroir.

Researchers at Oregon State University found that barley from different regions had noticeable differences in the taste of beers malted from barley.

The research caught the attention on Waterford distillery which reached out to them and wondered if this was true for other beverages like whiskey. They found that the environment in which the barley was grown had a greater contribution to the aroma of whiskey that the variety of barley.



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They even found that the aromatic profiles had sensory differences that existed between years also. The findings raised the question could there be a vintage aspect to whiskey like we see in wine?

I am certain the reviewers and readers of the magazine Whiskey Advocate would agree that whiskey does have its own terroir. Journal Foods, 2021

The flavonoid called quercetin that is found in apple peels has been known for years to help magnesium (Mg) and zinc (Zn) get inside our cells where it helps our immune system fight viruses. This process makes quercetin an ionophore where these elements help the immune system prevent virus replication.

A study by researchers at the University of Queensland and the German Center for Neurodegenerative Diseases found that quercetin helps promote brain health.

They found another chemical in apple peels called DHBA (dihydroxybenzoic acid) that also promotes brain cell growth and health.

Quercetin also acts as a natural antihistamine and anti-inflammatory which provides health benefits. In addition to apple peels quercetin is found in grapes, green tea, onions and elderberry flowers. I now know that elderberry fritters are a health food in addition to just tasting good.

The University of Bristol has found that one of the biggest sources of food for pollinating insects is the home garden. They found that a home garden can generate large amounts of nectar.

On average, a home garden generated a teaspoon of valuable nectar each day. A teaspoon to insects is like 2,000 pounds to a human and is enough to feed thousands of insects, which then feed our birds and other animals. Journal of Ecology, 2021



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Over the last couple decades there has been a lot of research that has shown plants, bacteria, fungi, etc. exhibit many forms of intelligence.

The Technical University of Munich has discovered another form of intelligence in the microscopic world in our soil. They discovered that slime mold saves memories even though it does not have a nervous system.

Studying the slime mold (*Physarum polycephalum*) a single cell that can grow several inches or more in diameter. The cell body of the mold is composed of tubes. They found that the mold can solve complex problems like finding the shortest path through a maze.

The tubular network serves as a memory storage device and is used to store encounters with food sources and use the information to make decisions in the future. Proceedings of The National Academy of Science, 2021.

Many times, in the bible it states that if we do not praise God then the plants and trees will. This would require some form of intelligence and awareness that we are starting to see throughout creation.

Food for thought:

The CDC reported that 48 million people get sick from foodborne illnesses each year that result in 128,000 hospitalizations and 3,000 deaths.

Yet, the USDA allows sewage sludge, full of toxic chemicals and pathogens to be used to fertilize conventionally grown food crops.



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Many companies (including several in our area) make their compost from sewage sludge. To hide the true source material, it is often called "Biosolids" which is just the marketing name for sewage sludge.

More reasons to buy and grow organically.

Two very informative books for those whom want to learn more about the contamination of or food supply:

Fateful Harvest by Duff Wilson, Harper Collins Publisher, ISBN 0-06-019369-7, A history of how hazardous waste is disposed of in synthetic fertilizers and ends up contaminating the food supply. Wilson was an investigative reporter for the Seattle Times Newspaper and published a series of articles in July-August 1997-1999.

Science For Sale: How the US Government Uses Powerful Corporations and Leading Universities to Support Government Policies, Silence Top Scientists, Jeopardize Our Health, and Protect Corporate Profits, by David Lewis, PhD., Skyhorse Publishing, 2014, ISBN: 978-1-62636-071-6

David Lewis was a research microbiologist at the EPA's Office of Research and Development and at the University of Georgia for over 30 years.

Later he became involved with studying the land application of sewage sludge (biosolids). When he discovered how the safety studies had been falsified, how toxic and dangerous the sewage sludge really was, he started reporting on the health problems it causes.

Government and Industry came after him to shut him up from telling the truth where he was later vindicated in federal court that he was a whistle blower telling the truth.



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For additional information on the dangers of sewage sludge and the waste water produced see: [www.sludgefacts.org](http://www.sludgefacts.org) and [www.sludgenews.org](http://www.sludgenews.org)

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