



NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

We often talk about the dangers of the herbicide glyphosate that is used in products like Round Up. It has been linked to cancer, intestinal issues, severe Covid outcomes and many more health issues.

A new study by Arizona State University and the Translational Genomics Institute (TGEN) has found that glyphosate crosses the blood brain barrier and infiltrates the brain. Once in the brain it triggers the formation of beta amyloid plaques which is one of the proteins characteristic of Alzheimer's disease.

They also found that the prevalence of Alzheimer's disease is much higher in agricultural communities that are using this chemical.

More reasons to avoid GMO foods, buy organic and better yet, grow one's own vegetables and fruits organically.

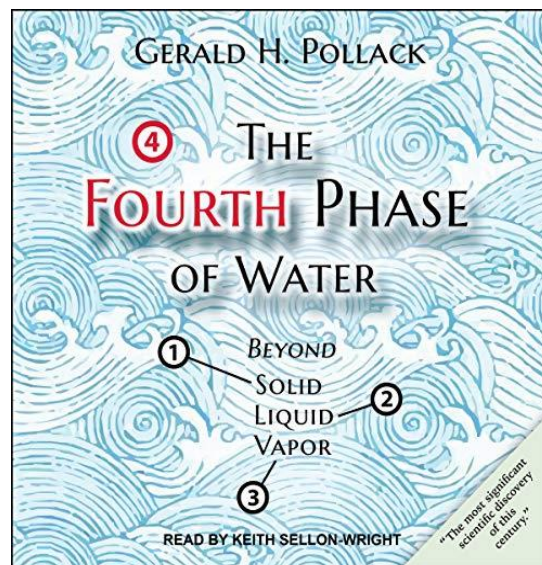
As gardeners we all know how soft a growing root tip can be, or how easily a fungal hyphae strand in our soil tears apart. Have you ever wondered how root tips will grow into concrete or how a fungal hypha will grow into solid granite if they are so soft and fragile?

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The book below has an explanation of how this is done by roots and fungi ("Radical Mycology - A Treatise On Seeing and Working With Fungi" by Peter McCoy, 2016, Chthaeus Press, ISBN 978-0-9863996-0-2).

We are all familiar with the common phases of water that we call solid, liquid, or gas. The explanation presented is that fungi and root hairs, have the ability to form a different phase of water called the exclusion zone (EZ) in their tissues. At the microscopic level water molecules will layer up in a form a few molecules thick and becomes many times harder and stronger than steel. This physical change in the water molecules of the root tip along with the chemical action allows fungi and roots to penetrate the hardest substances.

The book below explains this effect in detail. "The Fourth Phase of Water - Beyond Solid, Liquid, and Vapor" by Gerald Pollack, 2013, Ebner & Sons Publisher, ISBN 978-0-9626895-4-3. Dr.



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Dr. Pollard is a professor with Washington State University and has spent decades studying water. The book is about all the research on this effect called the Exclusion Zone (EZ) and how it is used in science and nature, where it explains many effects seen by other researchers that have never been explained.

The book is easy to read with lots of photos for those whom love science. For gardeners it explains why water dropped onto the leaves of certain plants curl up and form into balls that just roll off the leaves. This effect also explains why some mulches (or low-quality compost) become hydrophobic (water haters) and prevent water from entering the soil even after a hard rain.

Now researchers at Cambridge University have added to the new properties or phases of water being discovered. They found that water in a one molecule thick layer does not behave like a liquid or solid. It also becomes highly conductive to electricity at high pressures.

Water trapped between membranes or in tiny nanoscale cavities is common as it can be found in everything from microbes, to membranes in plants, in our bodies and in geological formations. When water is trapped in this manner it behaves very differently than water we drink.

The researchers discovered that when the water is confined to a one -molecule thick layer it exists in several phases, including a “hexatic” and “superionic” phase. In the hexatic phase it is neither a liquid or solid (somewhere in between) and in the superionic phase it is highly conductive to electrical charges.

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This new research may help explain how plants communicate for dozens of miles over fungal networks, or how trees talk with each other. God's creation continues to amaze me. Published in the Journal Nature (2022).

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