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JOHN'S CORNER:

NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

by John Ferguson

I received an e-mail this week from a reader with a few questions:

Hello, John.... We have had our backyard makeover and to avoid return of our "jungle" we want to spread a good layer of mulch. Talked with Bob D. couple of days ago and he recommends the twice (or double?) cut mulch....from you....I thought the really large pieces would be best. We have had a swamp here with all these rains and the soil is not allowing penetration. Got a good amount of compost and worm castings...both are full of worms....if I put them out before mulching, will the worms drown? Or is the mulch alone going to be enough to help absorb water? I know the worms help aerate the soil and facilitate somewhat better drainage.

I hope I am making some sense....

Please advise....also how thick a layer of mulch would you recommend?

Regards, I. H.

MY ANSWER:

Worms can actually breathe under water so they should be okay. When we see worms on the surface after a rain, it is usually some dissolved chemical. A common example is artificial fertilizers (along with pesticides, herbicides, etc) dissolved in the water that are salts that make them leave the soil as it can kill them.

There are several things to consider:

1) If the mulch is for plants then 2-3 inches thick for most species. Azaleas prefer 4-6 inches and



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Blueberries 6-8 inches thick. The composted or also called aged Native Mulch screened course works well and looks good. The second choice is aged Double ground Native Mulch that costs a little less and still looks nice and works well.

2) If you just want to break down clay and increase soil structure to help with water infiltration then fresh double ground native mulch will work best and still look nice. It also costs less.

3) If the mulch is for weed prevention (not in flowerbeds) and soil improvement and appearance is not important then course ground native mulch will work and offers the lowest cost. In general, the thicker one puts it down the more soil improvement one gets.

Note: Canada's Department of Forestry has funded research at Lavelle University for decades. They have found that native mulch improves soil (sand or clay) more than any other amendment.

Microbes in the soil will use the native mulch as a food source and allow them to multiply to extremely high densities. The bacteria produce glues that bind soil particles together into pellets that are called "peds". Fungus will then tie these peds together creating the crumb structure that we as gardeners desire. If one wants good drainage, we must protect the microbes (e.g. organic gardening).

Note: My original soil was black clay that I have used native mulch on for many years. The clay has broken down over the years into a rich soil with excellent structure. The last 3 days I have received over 9 inches of rain at my house. After the rain, there were many puddles in the yard. However, in a couple hours all the water had soaked into the soil.

The Soil Science Society of America has a paper on water infiltration at the following link: <https://soilsmatter.wordpress.com/2016/05/15/how-does-water-move-through-soil/>

A few weeks ago, OHBA (Organic Horticulture Benefits Alliance) brought in Dr. Thierry Vrain for a lecture at Rice University on glyphosate and all the health and environmental problems it causes. He has several lectures on this subject:

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<https://www.youtube.com/watch?v=KJSap2Jep2E>

<https://www.youtube.com/watch?v=RQkQXyiynYs>

https://www.youtube.com/watch?v=hVdCTgUs_kw

There is also an interview in the magazine with Dr. Vrain in Mother Earth News (courtesy of Dr. Bob Randall) that can be found at:

<http://www.motherearthnews.com/natural-health/glyphosate-toxicity-interview-with-thierry-vrain-zm0z16jjzkin.aspx>

There has been a lot of news lately about the Zika virus. A study published in the Journal "Cell Host & Microbes" (May 4, 2016) has found that a bacterium called *Wolbachia* prevents the virus from being transmitted to humans and animals. This bacterium is naturally found in many insects and has previously been found to prevent the transmission of the dengue and chikungunya viruses. The researchers believe that introducing this bacterium into mosquitoes will be an effective control of this disease.

Another study published by the American Geophysical Union in the Journal Geophysical Research Letters (May 2016) has found that emissions from farms (artificial fertilizers and animal waste) outweighs all other sources of fine particulate air pollution. These emissions combine in the air with combustion by-products to form solid particles that are a major source of disease and death. A study in the Journal Nature found that these particles cause at least 3.3 million deaths each year globally. This is another good reason to use organic methods in our garden and purchase organic foods whenever possible. We are commanded in the Bible to "Love our neighbor as ourselves" - the obvious corollary is that we do anything to harm our neighbor. One good thing about all the rain we have been having is that it temporarily washes these particles out of the air.



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A new organic product made from natural oils called NMX from the company EcoSeal has been found to be effective in killing bacterial and fungal infections on plants. It is in the final stages of testing and approval.

A study from Wake Forest University has found that Tiger Moths produce ultrasonic signals to warn bats that they do not taste good as part of their defense strategy. The more we learn, the more we realize that God's nature is amazing.

A study from Texas A&M published in the Journal Hortscience (March 2016) has found that several plants are salt tolerant. This is very important if one uses high salt products made from chicken or cow manure in their garden. They are orange peel jessamine, mexican hummingbird bush, flame acanthus, rock rose, and 'Dark Knight' bluebeard in decreasing tolerance. Plants found to be extremely salt sensitive are Eastern red columbine, butterfly blue false heather, and cardinal flower.