Healthy Soils Healthy Plants Healthy People

VOL 9. | WINTER

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HEALTHY SYSTEMS BUILD RESILIENCE IN HUMANS & IN NATURE BY MIKE SERANT

The last 2 years has tested humanity and we came out better than expected. We humans have become nicer to each other, neighbors have started new, lasting relationships, Mother Nature was rediscovered by many, and Organic gardening has soared. **We expect all this to continue in 2022.** Many challenges still exist but we've proven that we can rise to the occasion by adapting, improvising, and building stronger systems within ourselves and community.

Certainly, the last 2 years have been tough; unnecessary deaths, political strife, shortages, chaotic weather and so many other challenges. Yet, through it all, we as a civilization have held intact and, in many ways, have grown stronger. There are many positives, human health has become paramount, we have greater concern for a healthy environment, we learned that Mother Nature has a incredible capacity to recover if given a chance and we learned much more emphatically, that by following Organics, **all life systems thrive.**

All this makes great sense for what is Organics but following Natural Law and The Laws of Nutrition. These two Organic principles are scientifically and economically validated and are proved to always work.

'That which is biologically correct is always the most economical'

To continue your journey into the wonderful, healthy and prosperous world of Organics, I suggest two courses of action in 2022.

1)Support OHBA, ohbalonline.org. OHBA is a 501-c-3 Organic education nonprofit. OHBA fights hard everyday for a better world and your membership, donation and event attendance makes it happen.

2) Read the book Metabolical, robertlustig.com/metabolical/. This is one of those books that will change your life for the better.

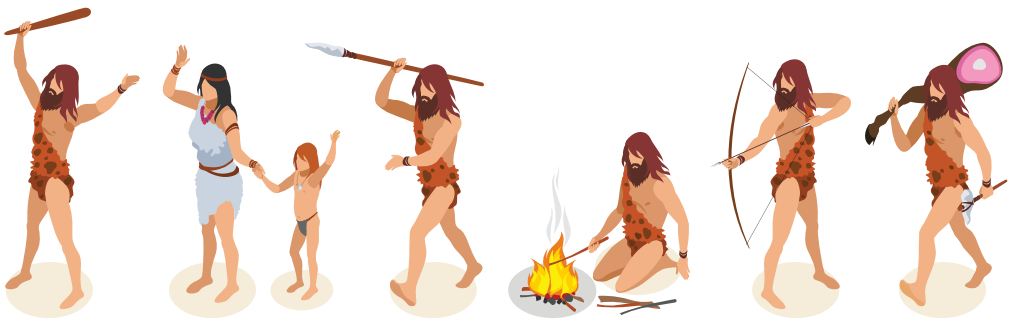
In closing, thank you for your MicroLife and Organic support, that means everything to us.

Mike Serant
Owner & Manufacturer of MicroLife

TABLE OF CONTENTS

GO WILD, GET HEALTHY

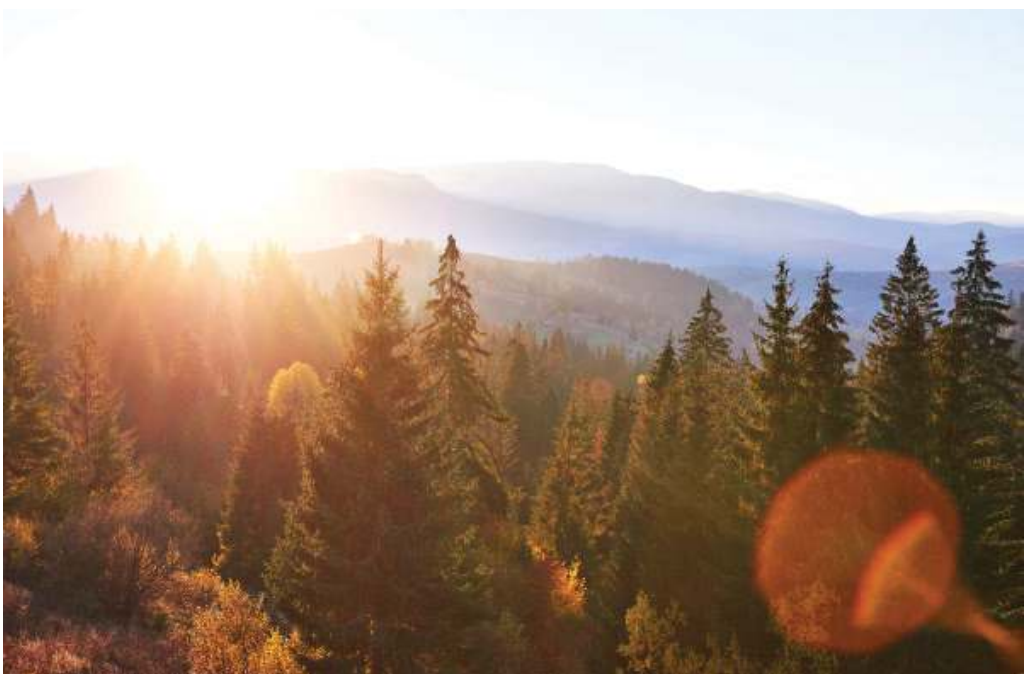
MARK MERRIWETHER, PH. D. | FORAGING TEXAS | MEDICINEMANPLANTCO.COM



What do you feed a caveman? The answer to that question involves looking at your own diet. Our bodies are the evolutionary masterpiece of a lifeform designed to survive the very harsh and unforgiving world of 50,000 years ago. And wow, we nailed it! However, the modern world is far different than those prehistoric days. The magnificent brain we developed has stripped away the challenges and dangers of our ancient life. And this has cost us very dearly.

If you want to stop a person in their tracks, ask them what's worse about their life than the life of an ancestor 8,000 generations back. They'll be hard pressed to answer and most likely make the claim everything is better now – completely ignoring the problems of obesity, heart disease, diabetes, bone density, and mental health. These issues have become so common that NOT having them is the more remarkable state. Why is this?

Going back to the prehistoric world – we spent our life traversing uneven, slippery ground as we constantly scanned with all five senses our surroundings for threats and resources while carrying loads of water, wood, meat, or fellow cavemen. But our bones were dense, our muscles were strong, our blood vessels clear, and our brains worked with true clarity because every minute of our lives was a crossfit workout coupled with intense stimulation of the brain. If it weren't for infections and occasional starvation, we were generally in much better health then than now!



Of course, very few people want to return to that lifestyle, even if blessed with a steel knife and cooking pot – but there are things you can do to recreate some of the caveman activities that our body craves at a genetic level. **At the top of the list is to start foraging – seeking out and utilizing the edible and medicinal plants around you!**

In addition to the nutritional benefits of eating ancestral foods, there are other benefits that come from the hunt and harvest itself, such as:

1. Improved sense of balance and core muscle strength from walking on uneven ground

2. Enhanced mood, memory, cognition, and focus from stimulation of senses

3. Stronger immune system which occurs naturally when out in nature

4. Reduced blood pressure from both exercise and stress reduction

5. Increased muscle density from walking and carrying things

GO WILD, GET HEALTHY

MARK MERRIWETHER, PH. D. | FORAGING TEXAS | MEDICINEMANPLANTCO.COM

It seems almost too good to be true, doesn't it? Of course, you do have to follow local foraging laws, learn the edible & medicinal plants, and spend a few hours every week doing it. But would you rather go for a walk in the wild or use a gym's weight machine covered in someone else's sweat? Like anything of value, learning the skill of foraging requires investing time – but it's easier nowadays than you think!

Let me end with a few tips on how to learn the useful wild (and landscaping!) plants around you.

Start by identifying the trees around you. Most plant ID photo apps are pretty bad except for when identifying trees. Double-check against some other information source what the apps says the tree is, but once you are confident the tree has been identified, Google its edible and medicinal properties. You'll be surprised what they are capable of!

Next, identify your landscaping plants. If you didn't plant it, take a picture of it and show it to a local plant nursery. They'll tell you what it is. Then Google the uses of those plants! Follow that with yard weeds and then do the same with the plants in yards of friends, coworkers, church, workplace, etc. Soon you'll know the uses of the plants around you while also sharpening your plant identification skills. You'll be exercising your muscles and brain while doing so.

We are an ancient body living in a modern world. By taking the best parts of both, we can become the healthiest humans possible! **Go wild, get healthy.**

Follow the Foraging Texas Facebook page and/or Instagram account for daily introductions to the edible, medicinal, and poisonous plants of Texas (and other, equally important places!)

WINTER RECOMMENDATIONS

Actively Growing Plant Tips:

1. For actively growing plants, like cool season veggies and cool season flowers another application of **MicroLife Ultimate 8-4-6**

2. Spray twice a month with **MicroLife Maximum Blooms**

Dormant Plant Care Tips:

For the majority of your plants under dormancy (grass, trees, shrubs) Now is the time for soil building & preparation for the Spring! Apply **MicroLife Humates Plus 0-0-4** everywhere, 10 lb per 1,000 sq ft.

OHBA

EDUCATIONAL SCHEDULE 2022

FEBRUARY 11
All Day Organic Horticulture Science
United Way of Greater Houston

FEBRUARY 18
Lunch & Learn
UH-D Students Focused

MARCH
Touring a Local Organic Farm
Location TBA

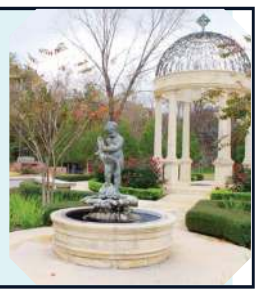
APRIL 8
Compost Class
UH-D/ HISD Students Focused

APRIL/MAY
Human Health with Dr. Arden Anderson
United Way of Greater Houston

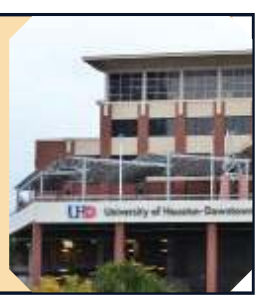
JUNE
Spanish Language Organic Seminar
United Way of Greater Houston

AUGUST
Organic Workshop & Fair
United Way of Greater Houston

OCTOBER
Halloween Organic Cemetary Tour
Glenwood Cemetary



NOVEMBER
Lunch & Learn
UH-D Students Focused



DECEMBER
Annual Yule Ball
Location TBA

OHBAONLINE.ORG

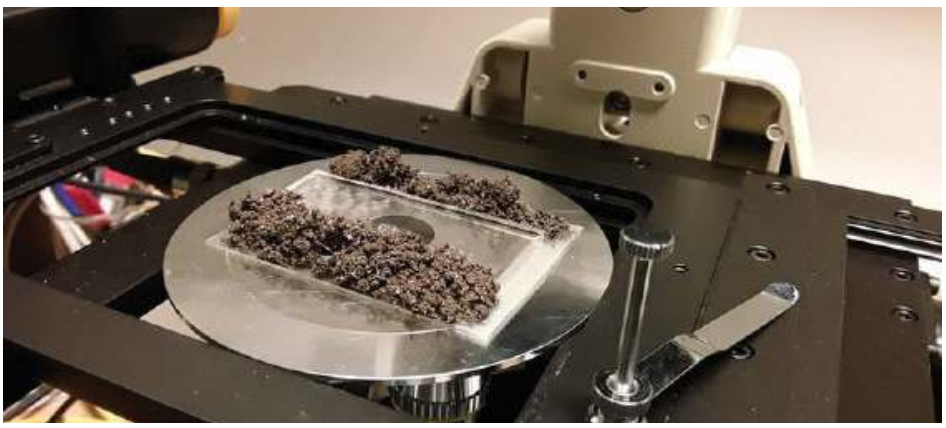
‘CYBORG SOIL’ REVEALS THE SECRET MICROBIAL METROPOLIS BENEATH OUR FEET & GUT MICROBIOMES

EDITH HAMMERI | LUND UNIVERSITY | THECONVERSATION.COM

Dig a teaspoon into your nearest clump of soil, and what you’ll emerge with will contain more microorganisms than there are people on Earth.

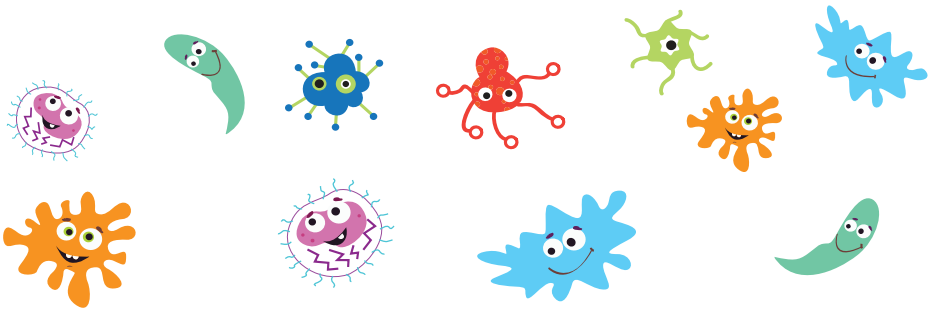
We know this from lab studies that analyze samples of earth scooped from the microbial wild to determine which forms of microscopic life exist in the world beneath our feet.

The problem is, such studies can’t actually tell us how this subterranean kingdom of fungi, flagellates and amoebae operates in the ground. Because they entail the removal of soil from its environment, these studies destroy the delicate structures of mud, water and air in which the soil microbes reside.



This prompted my lab to develop a way to spy on these underground workers, who are indispensable in their role as organic matter recycling agents, without disturbing their micro-habitats.

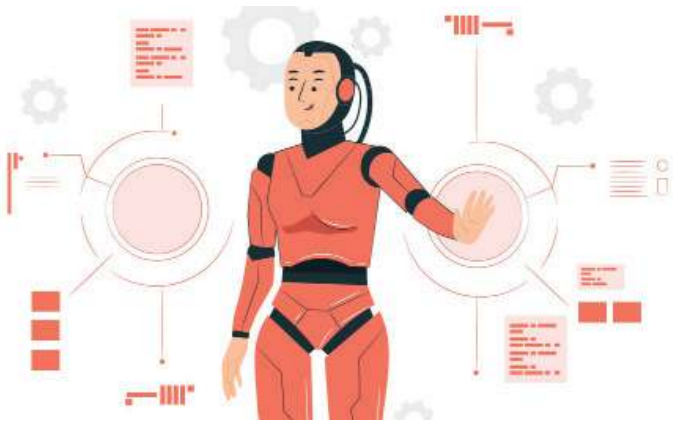
Our study revealed the dark, dank cities in which soil microbes reside. We found labyrinths of tiny highways, skyscrapers, bridges and rivers which are navigated by microorganisms to find food, or to avoid becoming someone’s next meal. This new window into what’s happening underground could help us better appreciate and preserve Earth’s increasingly damaged soils.



Cyborg soil

In our study, we developed a new kind of “cyborg soil”, which is half natural and half artificial. It consists of microengineered chips that we either buried in the wild, or surrounded with soil in the lab for enough time for the microbial cities to emerge within the mud.

The chips literally act like windows to the underground. A transparent patch in the otherwise opaque soil, the chip is cut to mimic the pore structures of actual soil, which are often strange and counter-intuitive at the scale that microbes experience them.



Different physical laws become dominant at the micro scale compared to what we’re acquainted to in our macro world. Water clings to surfaces, and resting bacteria get pushed around by the movement of water molecules. Air bubbles form insurmountable barriers for many microorganisms, due to the surface tension of the water around them.

Once we’d implanted our chips into the soil, we could watch as microbes filed through on their decomposition commutes, revealing their interactions, their food webs, and how different microbes engineer their surrounding, ever-changing micro-habitats.

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Underground engineering

In our study, we also wanted to explore how and by what means microbial cities are engineered. One way we could do this was by watching how soil minerals found their way into our chips, creating pockets of real soil space within the artificial structures we’d placed in the ground.

As our chips started to dry, we witnessed how water is sucked through soil pores: a tsunami of water movements that soil microorganisms are regularly exposed to as rain and shine tampers with their tiny worlds. The resulting patterns in the soil minerals looked just like a riverbed system in our macro world.

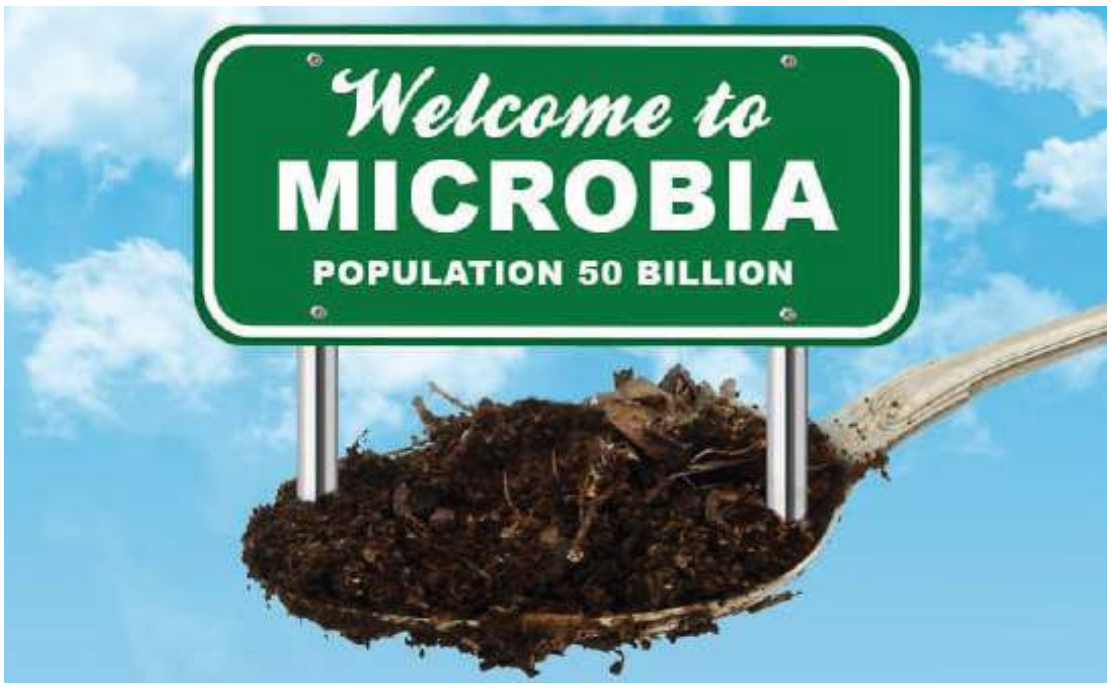
And it’s not just physical forces that shape the habitat of soil microbes. With their strong hyphal tips, fungi often act like “ecosystem engineers”, opening up passages and blocking others with their cells. They’re responsible for many of the streets, avenues and bridges in the microbial metropolis.

More surprisingly, we found that other, less “strong” organisms also alter the microscopic structure of soils. Aciliate, for example, which possesses small hair-like extensions for locomotion, can also bulldoze soil with its vigorous foraging for food.

Soil, science and society

Our cyborg soil study ultimately helps connect field ecology with controlled lab studies. It combines the advantages of studying realistic, complex communities of soil organisms while at the same time carefully controlling and adjusting factors like nutrient supply or temperature so that we can see how soils and their microbes react to changes above ground.

But there’s another benefit. We believe that observing the hidden world of soils and their intriguing inhabitants could help people engage emotionally with this vital ecosystem. Other ecosystems have long had charismatic animals to represent conservation initiatives. Soils on the other hand are still associated with dirt and dirtiness. Yet soils support 95% of our food production. They store more than twice the amount of carbon than the biosphere and atmosphere combined.



We want to show that when you dig your teaspoon into the earth, you’re excavating the upper reaches of an exciting secret metropolis that contains a quarter of Earth’s species. The cute organisms in your spoon aren’t dirty: they’re quietly providing vital ecosystem services which support all life above ground. These soil-city dwellers are in urgent need of better protection.

READ FULL ARTICLE HERE

Article Source: ***https://theconversation.com/cyborg-soil-reveals-the-secret-microbial-metropolis-beneath-our-feet-164748***

SOIL AS CARBON STOREHOUSE

JUDITH D. SCHWARTZ | YALE ENVIRONMENT 360

The degradation of soils from unsustainable agriculture and other development has released billions of tons of carbon into the atmosphere. But new research shows how effective land restoration could play a major role in sequestering CO2 and slowing climate change.

In the 19th century, as land-hungry pioneers steered their wagon trains westward across the United States, they encountered a vast landscape of towering grasses that nurtured deep, fertile soils.

Today, just 3 percent of North America's tallgrass prairie remains. Its disappearance has had a dramatic impact on the landscape and ecology of the U.S., but a key consequence of that transformation has largely been overlooked: a massive loss of soil carbon into the atmosphere. The importance of soil carbon — how it is leached from the earth and how that process can be reversed — is the subject of intensifying scientific investigation, with important implications for the effort to slow the rapid rise of carbon dioxide in the atmosphere.

According to Rattan Lal, director of Ohio State University's Carbon Management and Sequestration Center, the world's cultivated soils have lost between 50 and 70 percent of their original carbon stock, much of which has oxidized upon exposure to air to become CO2. Now, armed with rapidly expanding knowledge about carbon sequestration in soils, researchers are studying how land restoration programs in places like the former North American prairie, the North China Plain, and even the parched interior of Australia might help put carbon back into the soil.

Absent carbon and critical microbes, soil becomes mere dirt, a process of deterioration that's been rampant around the globe. Many scientists say that regenerative agricultural practices can turn back the carbon clock, reducing atmospheric CO2 while also boosting soil productivity and increasing resilience to floods and drought. Such regenerative techniques include planting fields year-round in crops or other cover, and agroforestry that combines crops, trees, and animal husbandry.

Recognition of the vital role played by soil carbon could mark an important if subtle shift in the discussion about global warming, which has been heavily focused on curbing emissions of fossil fuels. But a look at soil brings a sharper focus on potential carbon sinks. Reducing emissions is crucial, but soil carbon sequestration needs to be part of the picture as well, says Lal. The top priorities, he says, are restoring degraded and eroded lands, as well as avoiding deforestation and the farming of peatlands, which are a major reservoir of carbon and are easily decomposed upon drainage and cultivation.

He adds that bringing carbon back into soils has to be done not only to offset fossil fuels, but also to feed our growing global population. **"We cannot feed people if soil is degraded,"** he says.

SOIL AS CARBON STOREHOUSE

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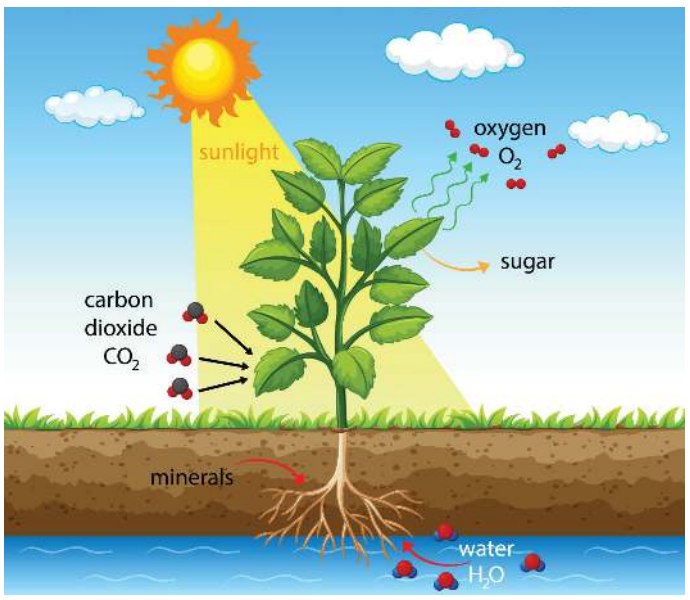
says Thomas J. Goreau, a biogeochemist and expert on carbon and nitrogen cycles who now serves as president of the Global Coral Reef Alliance. Goreau says we need to seek opportunities to increase soil carbon in all ecosystems — from tropical forests to pasture to wetlands — by replanting degraded areas, increased mulching of biomass instead of burning, large-scale use of biochar, improved pasture management, effective erosion control, and restoration of mangroves, salt marshes, and sea grasses.

"CO2 cannot be reduced to safe levels in time to avoid serious long-term impacts unless the other side of atmospheric CO2 balance is included," Goreau says.

Scientists say that **more carbon resides in soil than in the atmosphere & all plant life combined;** there are 2,500 billion tons of carbon in soil, compared with 800 billion tons in the atmosphere and 560 billion tons in plant & animal life. And compared to many proposed geoengineering fixes, storing carbon in soil is simple: It's a matter of returning carbon where it belongs.

Through photosynthesis, a plant draws carbon out of the air to form carbon compounds. What the plant doesn't need for growth is exuded through the roots to feed soil organisms, whereby the carbon is humified, or rendered stable. Carbon is the main component of soil organic matter & helps give soil its water-retention capacity, its structure, & its fertility.



According to Lal, some pools of carbon housed in soil aggregates are so stable that they can last thousands of years. This is in contrast to "active" soil carbon, which resides in topsoil and is in continual flux between microbial hosts and the atmosphere.

"If we treat soil carbon as a renewable resource, we can change the dynamics," says Goreau. "When we have erosion, we lose soil, which carries with it organic carbon, into waterways. When soil is exposed, it oxidizes, essentially burning the soil carbon. We can take an alternate trajectory."

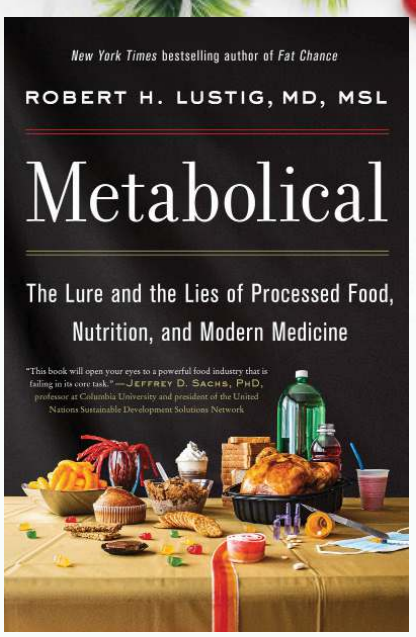
As basic as soil carbon is, there's much scientists are just learning about it, including how to make the most of its CO2 sequestration capacity. One promising strategy, says Goreau, is bolstering soil microbiology by adding beneficial microbes to stimulate the soil cycles where they have been interrupted by use of insecticides, herbicides, or fertilizers. As for agroforestry, programs with greater species diversity are better able to maximize the storage of carbon than monocultures. Many researchers are looking to biochar — produced when plant matter, manure, or other organic material is heated in a zero- or low-oxygen environment — for its ability to turn problem areas into productive sites while building soil carbon. Says Goreau, "Vast areas of deforested land that have been abandoned after soil degradation are excellent candidates for replanting & reforestation using biochar from the weeds now growing there."

READ FULL ARTICLE HERE

Article Source: ***https://e360.yale.edu/features/soil_as_carbon_storehouse_new_weapon_in_climate_fight***

Give your family green thumb what they really want for Christmas, MicroLife is the perfect gift!

Give the Gift of Health this Holiday Season!



Metabolical By: Robert Lustig, MD

robertlustig.com/metabolical