

## Carbon and compost: Gardening in a time of climate change

by [Norman Wirzba](#) in the [March 4, 2015](#) issue



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What if one of the most compelling responses to the overabundance of carbon in the atmosphere is to restore the carbon in the ground beneath our feet? And what if the best inspiration and model for this carbon-restoring work is to be found in the life of a gardening God?

Like a good gardener, God loves compost because compost is the basis for fertility and fecundity. It is where carbon takes some of its most dense and complex forms.

In his lovely book *The Gardener's Year*, the great Czech writer Karel Čapek says that heaps of compost are the primary monuments that gardeners love to build. If such a gardener could have been at the Garden of Eden, he or she would have sniffed excitedly and said, "Good Lord, what humus!" God loves the rich layers of organic matter and the billions of microorganisms, fungi, bacteria, and earthworms that move through soil because it is in their movement that terrestrial life's richness is found. Healthy soil comes first. It is quite literally the foundation upon which our life rests. No humus, no humanity.

People having become almost exclusively the shoppers rather than the producers of food, soil is easily forgotten or taken for granted. But the story of scripture and the story of our lives speak an essential truth: soil is precious because it is the material medium of God's life-giving and life-nurturing love. In its degradation all creatures suffer, and God is dishonored.

Having made the first human from the ground, God then instructs this earthling to take care of the garden. This work is not a punishment. It is, rather, an invitation to the human to participate with God in the work of caring for soil and feeding creatures, and thereby also coming to understand and appreciate God's nurturing life and the character of the world. It is an invitation to become smart and sympathetic in our life on the land and with other creatures. Working with God, we have an opportunity to learn the habits and refine the gardening skills of attention and care. One could argue that our divinely appointed vocation to care for the garden is really God's way of saying, "Understand the carbon cycle that makes all life possible, and then figure out how you can be a nurturing and harmonious member within it."

Anthropogenic climate change is the clearest indication that people have forsaken their gardening vocation. We have not attended to the balance of carbon in the ground. We see this in much of today's agriculture where vast fields of one crop (corn, soybeans, rice, wheat) are grown, thereby degrading the soil with regimens of plowing and the steady application of fossil-fuel-derived fertilizers and herbicides. Meanwhile, herbivores have been taken off the land and put in confinement where, instead of aiding soil fertility, they contribute to the production of greenhouse gases (methane and nitrous oxide). The result: it is estimated that industrial agriculture alone contributes 30 percent of the greenhouse gases that are warming the planet.

Like many others, I find it overwhelming to try to wrap my mind around planet warming and all that it means: ocean levels rising and coastal developments drowning, springs and rivers evaporating, species losing their homes and dying, regions burning up and drying out, people fighting over scarce water, extreme weather destroying homes, and coastal residents becoming refugees. And this is just a partial list! No wonder more and more people are saying that climate change represents the single biggest threat to life as we know it that humanity has ever faced. Is the American dream over? Is capitalism finished? Can I keep my iPhone?

The temptation is to stick our heads in the sand and pretend that global warming isn't happening. But if we take the idea of God the Gardener seriously, the better response is literally to work our hands into the soil, commit to the soil's healing, and in that action contribute in a major way to the cooling and healing of our planet. How? By advocating for a better agriculture that returns atmospheric carbon to the ground.

Carbon dioxide is not evil. It is a vital player in ecosystems and biophysical and meteorological processes. The key is in the proportions. Too much carbon in the atmosphere and we all overheat. Too little and we freeze. Without carbon dioxide, vegetative life is asphyxiated. Plants breathe in carbon dioxide as food and breathe out oxygen for creatures like us. We then get to eat the plants (and, if you are a carnivore, the herbivores that eat the plants we can't). It really is a magnificent, awe-inducing arrangement.

What does soil have to do with any of this? A lot. What has not been appreciated well enough is that healthy soil stores carbon. The carbon cycle works roughly like this: sun energy shines on the plant, enabling it to photosynthesize or digest atmospheric carbon dioxide. Oxygen is released back into the atmosphere, but the carbon is synthesized into the glucose that feeds the plant (and eaters like us who then eat the plant). Through a complex process of chemical reactions, this glucose is then resynthesized to make various carbohydrates, proteins, and oils—all carbon compounds. From the standpoint of addressing climate change, the truly exciting thing is that a considerable amount of this glucose carbon—between 30 and 40 percent—travels underground, leaking into the soil through the plant's roots. When underground, this carbon feeds the soil microbes that contribute to soil fertility and to vibrant plant life. In a process called humification, complex molecules made up of carbon, nitrogen, minerals, and soil particles form to make humus. Humus does not decompose much, making it a stable store of carbon that remains locked in the ground for a long time.

The key to carbon sequestration is to promote the soil microbes that make soil thrive. For that to happen, a vigorous and deep plant root structure needs to develop. When that happens, even more carbon is taken out of the atmosphere, rainfall is absorbed and retained, and the land becomes more productive. In other words, when people commit to the building of compost and the care of the soil—that is, when they work to promote vigorous plant growth and deep root structures—they will not only grow more nutritious and flavorful food, but there will be less carbon dioxide in the atmosphere. By some estimates, a lot less. According to scientists, if we could increase by just 2 percent the carbon content of our soils, we could bring carbon dioxide levels in the atmosphere down to levels that have made the life we now know possible.

We need to pause now to let that bit of information sink in. Insofar as people become good gardeners and farmers by 1) nurturing soil, 2) building compost, 3)

drastically reducing the application of poisons, 4) stopping unnecessary tillage, 5) stimulating deep root growth, and 6) taking herbivores out of confinement and returning them to the land (where their manure can further aid soil fertility), a truly major step can be taken toward reversing the buildup of carbon in our atmosphere. We don't need to mount the hugely risky geo-engineering feat of spraying our atmosphere with sulfate aerosols to create a "global dimming" effect. What we need to do is accept the work that God daily performs and has called us to from the beginning: take care of the soil.

It sounds simple enough, but it is a huge and revolutionary task. Major financial players have been and are continuing to promote an agricultural system that degrades soil. Moreover, in the form of the farm bill, the U.S. government seems committed to the perpetuation of production practices that compromise natural fertility. Billions of dollars hang in the balance as companies like Monsanto, Cargill, and ADM seek to intensify our reliance on chemical inputs and toxins that destroy the microbial life that makes soil healthy. This is a double whammy: industrial techniques degrade the soil's ability to absorb and hold carbon, and they burn ancient carbon from the ground to fuel the whole process. The clear sign that this agricultural method is in trouble is that it burns rather than restores carbon to boost fertility!

Naomi Klein is correct in saying that climate change "changes everything," because it challenges to the core the economic system and the civilization that have been waging war against the planet for centuries. Insofar as people commit to the care of the soil, not just agricultural practice but also new cultural forms and priorities are going to have to be developed in politics, economics, education, and our social institutions. Why? Because to become the kinds of people who are attentive to the nurturing of soil means that correlative sympathies and dispositions will have to extend into all other aspects of our economic life too.

This essay is not a recommendation for everyone to become a farmer. The farmers we need in the future will be very special people, committed to refining the knowledge, skill, and inventive powers that relatively few people have. What the great majority can do is figure out how to be the farmers' moral and economic support. Can we demand from our politicians that they give us a farm bill that directs tax dollars to a healing and regenerative agriculture? Can we develop and financially support local food economies that honor good work and good food? The choice is made every time we sit down to eat.

Churches need to be the champions of growers and nurturers, showing how their work is a participation in God's own healing ways with the world. Churches should make their landholdings and their finances available to gardeners and farmers who want to do this work. The time is ripe, even urgent, for a new kind of CSA—church supported agriculture—in which the faithful follow God to the soil, grow nutritious food and beautiful flowers, and thereby contribute to the healing and the cooling of the world.

That we worship a gardening God means that we are not doomed to a warming, dying planet. The inspiration, the tools, and the knowledge we need to care for soil are already available.