

Gardening Lightens Your Carbon Footprint

By Gretchen Valido

Thrusting my shovel into fallow garden soil is a spring ritual I relish. A few weeks back, images of beets, zucchini, green beans and eggplant sustained my efforts to work several bags of chicken manure into the raised garden bed, but truth be told it was memories of last year's chard that gave me the happiest anticipation. Quick trip out back to the garden to snip-clip, return to the kitchen with crisp leaves in hand, into the steamer the greens go after a quick wash, then heap them on my waiting plate topped with a spot of butter, all in less than 15 minutes. How satisfying is that!

Have you read any Michael Pollan? The titles are provocative: *The Botany of Desire*; *The Omnivore's Dilemma*; *In Defense of Food, an Eater's Manifesto*--refocusing and expanding an understanding of our relationship to ancient nature and sustenance. In the latter book he brings us back to food's larger context, and makes the point that we relinquish control of our health the farther we stray from preparing and eating real food. Don't eat anything that your great-grandmother wouldn't recognize as food, he says. Pollan's straightforward advice: "Eat food. Not too much. Mostly plants."

Growing your own organic vegetables even in Central and Eastern Oregon can be very rewarding, even inspirational. Backyard gardens present us with personal opportunities for lifestyle balance, economy, nutrition, exercise, observation, community, solitude, education, reflection, and well-being. Bringing children to gardening adds opportunities for teachable moments, self-discipline, activity-centric involvement (as opposed to toy- or electronics-centric activity), delayed gratification (presumably you and I have already learned that) and connection. These are joyous possibilities!

Food-Related Greenhouse Gases

Looking at vegetable gardening from another perspective, not only does it put healthier food on the table and connect you with natural processes, it reduces your carbon footprint fairly dramatically. You're not eating food that's been grown with chemical fertilizers (derived from natural gas), harvested with fossil-fueled machinery and stored in electrically cooled refrigerators. You're not driving to the market and not buying food that's been transported perhaps hundreds or thousands of miles. "Food miles" comprise about 11% of the average family's food-related greenhouse gas emissions, according to researchers at Carnegie Mellon University. You can't get any more "eat local" than your own backyard.

Recent research findings conclude that you can also lighten your carbon footprint significantly through food choices. According to the journal *Environmental Science and Technology*, replacing red meat and dairy products with chicken, fish or vegetables just one day a week has the same impact on greenhouse gas emissions as switching to an entirely locally-grown diet. Michael Pollan is a strong advocate of a diet based on fresh vegetables and fruits, with limited meat. Founding Father Thomas Jefferson, who had an intense interest in the study of plants, said "I have lived temperately, eating little animal food, and that . . . as a condiment for the vegetables, which constitute my principal diet."

What's Your Score?

The eating habits of Americans generate 5% of the world's greenhouse gases, according to the website eatlowcarbon.org. The website's fun graphic food choice calculator lets you drag and drop various menu items to see what the carbon footprint is of that food. Instead of counting calories, we're counting CO₂e's (carbon dioxide equivalent emissions). The site estimates a person's typical daily food intake score is 4,500 points, where one point is equivalent to one gram of CO₂e.

A 2,000-point meal represents 4.3 pounds of CO₂e, and at 4,500 points daily, the average annual carbon footprint for the food you eat equates to about 3 tons of CO₂ per year, or 3 round-trip 3-hour flights. Here are some examples of typical breakfast CO₂e scores: steelcut oats-144; whole wheat buttermilk pancakes-636; eggs, bacon and toast-844; breakfast cereal with milk-1224; omelet with meat and cheese-1519. Other meals are vegetable chow mein-313; cheese pizza-516; chicken sandwich-697; cheeseburger and fries-1977.

One reason that meat and dairy have such high scores is that ruminants (cows, sheep, goats) burp and pass methane gas, which is 23 times more potent in the atmosphere than CO₂. Ruminant livestock production produces 18% of the world's greenhouse gases. The energy input required to grow livestock feed, the length of time it takes for these animals to reach maturity and be fed (as compared to plants), the fuel required to transport their relatively heavier weight, and decomposing manure are also factors in their high CO₂e scores. .

Happy Composting

Another way to ratchet down the carbon footprint is to compost, which your garden and the planet will love. Though I do bury some kitchen scraps, my project this summer is to start composting. Composting puts nutrients back into the soil instead of landfills, it adds water-retaining organic matter to the soil, and it eliminates or minimizes the need for chemical fertilizers, pesticides and herbicides which contaminate groundwater and destroy the soil. Synthetic fertilizers acidify the soil, kill beneficial microbes and earthworms, and damage soil structure such that it doesn't hold water anymore.

Compost provides the basic nutrients of nitrogen, phosphorus, potassium and many other essential micronutrients that plants need to be healthy, and prevents nutrients from being leached away from plant roots. Composting can also save money because you use less water and minimize fertilizers, pesticides and herbicides. Plus you have a smaller garbage can at the curb, contributing less to landfills which produce methane.

Extraordinary Worms

There are lots of ways to compost, and I've chosen worm bin composting, or vermicomposting. Charles Darwin recognized worms as extraordinary creatures and wrote his last book about decades of worm observations and the formation of humus produced by earthworms. "I doubt," he said, "whether there are many other animals which have played so important a part in the history of the world, as have these lowly organized creatures." He was fascinated that great stones wind up buried, through the action of worms. Darwin calculated that earthworms produce 7.5-18 tons of castings (digested soil, rock and intestinal secretions) annually per acre!

I'm ready for worm composting with a wooden box, paper strips and peat moss for bedding, plus kitchen scraps of fruits, vegetables, tea bags, coffee grounds, egg shells and garden waste for good measure. Worms, I've read, do better in a cool, damp environment such as a garage or utility room where those Red Wiggler worms will have at it and make some good compost in about 3 months. You can even make compost "tea" from worm castings in a 1-to-5 ratio that's great for all your plants. There's information on making a worm bin at www.metrokc.gov/dnrp/swd/composting/wormbins.asp, and for an absolutely delightful MP3 video clip on Worms at Work, see www.sciencefriday.com/videos/watch/10111.

An indoor automatic composter that processes up to 120 pounds of kitchen waste per month is available for \$300, as well as one that accepts pet waste for \$400, made by NatureMill. See www.naturemill.com/earth.html.

Though food and paper are biodegradable, they top the list of least recycled products, accounting for almost 50% of landfill solid waste. Because food and paper waste is buried and has no access to air, it doesn't decompose. With methane produced from landfills 23 times worse than carbon dioxide as a greenhouse gas, composting is a responsible and important way to help reduce global warming while improving the health of the soil.

Good soil is alive with bacteria, fungi, insects and plant roots, and has a wonderful sweet alive aroma. Why not try your hand at vegetable gardening and composting this summer.

Sidebar:

"My whole life has been spent waiting for an epiphany, a manifestation of God's presence, the kind of transcendent, magical experience that lets you see your place in the big picture. And that is what I had with my first compost heap. I love compost and I believe that composting can save not the entire world, but a good portion of it."

--Bette Midler, in a Los Angeles Times interview