

A Nice Green Lawn

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Since the late-1980s, the American lawn has been an obligatory topic in any series about environmental management and conservation. To raise awareness and inspire change almost all essays, articles, books, or blogs present the following “shock and awe” list. It is often supplemented with additional items about increased stormwater runoff, habitat loss, pesticide impacts on pollinators, and other unintended consequences that, sadly, echo Rachel Carson’s clarion call in *Silent Spring* (1962).

1. Lawns comprise the largest irrigated crop in the U.S. They cover an area (49,000 square miles) approaching the size of New York State. (If you have ever driven from western Massachusetts to Buffalo, or from New York City to the Canadian border, you will recall the “are we there yet?” size of New York State) This area is limited to ornamental turf grass; it does not include pastures and hayfields to grow grass as a food source for livestock.
2. Many types of agricultural chemicals (fertilizer, herbicides, insecticides, and fungicides) are routinely applied to lawns to keep them weed-free, pest-free, green, and “healthy.” The application rates used by most homeowners and many landscape contractors are often ten times higher on a per acre basis than what farmers apply for the most intensive agricultural uses. I know, I know your lawn is small ...but see #1. Some of these chemicals, even the dry granular or premixed liquid homeowner versions, are really scary, especially without appropriate PPE. (What you don’t know will hurt you). By the way: all of those industrial farmers must complete EPA-mandated pesticide applicator training and licensing. They are also riding high above the sprayer or spreader in a climate-controlled tractor cab.
3. Lawn maintenance equipment (primarily mowers with gasoline engines) produces 11 times more air pollution on an hourly basis than an average car. Put another way, if it takes one hour to mow your lawn, you could drive 500 or 600 miles, maybe more, before you generated the same amount of pollution with your car as that little 4-cycle engine spewed into the atmosphere. Other lawn and garden equipment with 2-cycle engines (e.g. string trimmers) using gas and oil mixtures are even worse (discharging smelly, blue exhaust fumes).
4. Lawns are an artificial monoculture of cool season grasses originally imported from Europe (yes, even “Kentucky” bluegrass). Two or three non-native grass species have replaced the much more diverse ecosystem of plants and animals that once grew on the same site. Not surprisingly, the habitat value of lawns is very limited; favoring a few species (e.g., robins) and functionally excluding many more (e.g., migratory songbirds).
5. Unless you have a cistern or windmill you are using drinking water¹ for irrigation. Cool season grasses must be irrigated when rainfall is not sufficient (typically at least one inch per week) to keep the turf green. As you know, without sufficient water, your lawn will turn brown; this is a natural physiological response to dry conditions. The turfgrass is dormant, not dead, but its appearance is unacceptable to many people, homeowner associations, country clubs, and other venues ...and on go the sprinklers (sometimes automatically, even while it’s raining).

What do most of these articles suggest we should do to stop contributing to these grim statistics? [First, get a large trust fund or investment portfolio.] Replace your lawn with beautiful and elegant perennial plantings designed by a landscape architect and/or professional gardener. Oh, you don’t have \$10,000s to spend on design, installation and maintenance? Well then, you should buy a tiller and replace most of your lawn with an organic vegetable garden. Oh, you don’t really like gardening, freezing, and canning? Well then, you could have a “freedom lawn.” Simply stop mowing and let Nature take its

¹ The United Nations and research institutes estimate that 1.8 billion people, world-wide, do not have access to potable water. If Americans drank this water, it would land them in the hospital within 48 hours. In addition, about 40% of the world’s population (~3 billion people) do not have access to a dependable supply of drinking water. When I was in graduate school (hydrology and water resources engineering) in the 1980s, ~50% of the world’s population did not have a dependable supply. That sounds like progress until you do the math: 50% of 4.9 billion people in 1986 = 2.45 billion. In absolute terms, the problem has gotten worse. I realize that not watering my lawn does nothing for people in many parts of Asia, Africa, and other regions but it still feels wrong and wasteful.

[her] course. A freedom lawn is a great way to meet more of your [now irate] neighbors, code enforcement officers, and local building officials! You also can be “that house” on your block. Our lawn behavior is strongly influenced by cultural norms.

I have not done the research needed to quantify the change (\pm) in total area of lawns, sales and application of fertilizer and pesticides, and other metrics of environmental impact over the last thirty years. However, I can report that between 1990 and 2020 the population of the U.S. has grown from 250 to 330 million, and the total area of developed land in the conterminous U.S. has increased by 7.1 million acres between 2001 and 2016. The working hypothesis that more people and more urban and suburban development equals more lawns and environmental impact seems uncontroversial. Unfortunately, it also appears that thirty years of education and advocacy work for smaller, “greener” lawns has had little, if any, net effect.

Why? ...I believe that when most people are confronted with the daunting tale of woe—then are presented with financially or physically impractical alternatives—even the most conscientious readers throw up their hands in despair. They could do something but end up doing nothing. This is not to say these well-intentioned articles are inaccurate or change is not urgently needed. However, since most people like lawns and also support reasonable ways to improve environmental quality, I think a commonsense, stepwise approach, rather than a wholesale transformation is the most promising path. In fact, reducing the environmental impacts associated with your lawn may be one of the best examples of the 2% per year approach presented for your consideration in this series.

What if you...

- established border or “island” plantings of trees, shrubs, and low maintenance, hardy perennial plants, top-dressed with bark mulch to progressively reduce the area of turf on your property, year by year?
- did an inexpensive soil test (from a homeowner kit or public university lab service) to accurately determine how much fertilizer your lawn needs instead of spreading the whole bag?
- applied lime first, making nutrients already in the soil more available and growing conditions better, and observed how your lawn responded? (This could eliminate the need for new fertilizer for many years.)
- mowed your lawn on an as-needed basis rather than once a week whether it needs it or not (...and reduced air pollution in direct proportion, especially if your equipment is well maintained and running smoothly) (Better yet, use a battery-powered electric mower if you have a small lawn.)
- expected dry weather dormant periods when parts of the lawn will temporarily turn brown, and minimized or skipped irrigation [with drinking water]? (This has the added benefit of encouraging deeper rooting.)
- raised your mower to the maximum height and used a mulching blade to recycle grass clippings and build a healthy thatch layer? (This also helps to retain water, organic matter, and nutrients.)
- overseeded in late-September with white clover (once a part of seed mixes before the all-out war on weeds began) to capture nitrogen from the atmosphere, add soil organic matter, and support pollinators?
- developed a reasonable tolerance for the presence of some weeds in otherwise healthy turf in order to eliminate the use of herbicides? (You can lean over, pull them out, and put them in your compost bin.)
- planted a small vegetable garden, a row of blueberry bushes, and/or a few semi-draft fruit trees in sunny areas that you never use and are the first to turn brown without irrigation?

I think it's easy to see how even a small subset of the list above, and other things you think of, could substantially and permanently reduce the environmental impact of your lawn by at least 20 or 30 percent, not a mere 2% per year.

E.B. White once wrote “*I arise in the morning torn between a desire to improve the world and a desire to enjoy the world. This makes it hard to plan the day.*” I think our lawns provide an excellent opportunity to improve *and* enjoy the world. Ironically, planning to do less conventional turfgrass maintenance is the simple way to reduce adverse impacts, generate more environmental benefits, and derive more (healthy) enjoyment from your own backyard. Reject the marketing image on the turf builder bag.



Sit outside in the shade and listen to birds singing in the new 2% per year trees you planted. Watch bees and other pollinators visit the clover in your lawn and flowers in your new 2% per year garden. Encourage children, grandchildren, and pets to run, roll, and play on the grass. You know it is free from harmful chemicals (...since there are no little yellow signs on plastic stakes that delineate an ecological minefield). Pick some cherry tomatoes and lettuce from your new 2% per year vegetable garden and make a fresh salad. Think about the time and money you once invested in your wannabe Astro-turf lawn while you enjoy your nice **green** lawn. Invite and encourage your neighbors, family, and friends to do the same.