What's Wrong with the Conventional Lawn?

Lawns occupy roughly 50 million acres (20 million ha) in North America—an area twice the size of Pennsylvania. Annually in the U.S. we spend tens of billions of dollars caring for these lawns. In some areas we use over half of our municipal freshwater to irrigate these lawns, and we fortify them with millions of tons of fertilizer and thousands of tons of pesticides.

What's wrong with this picture? From an environmental, health, and even economic standpoint, a lot is wrong with conventional turf. Maintenance of turf necessitates regular mowing during the growing season. The roughly 90 million lawnmowers, weed trimmers, leaf blowers, and other small-engine lawn and garden tools in the United States spew out approximately 5% of the nation's air pollution, according to the U.S. Environmental Protection Agency (EPA)—and a good deal more in many metropolitan areas. A typical 3.5 horsepower gas mower emits about the same quantity of volatile organic compounds (VOCs) in one hour as a late-model car driven 340 miles (550 km), according to the California Air Resources Board. On top of that, EPA estimates that users of such equipment spill 17 million gallons of fuel each year—which is more than the Exxon Valdez oil spill!

Watering lawns consumes 30% of municipal freshwater in the eastern U.S. and 60% in the West. A *U.S. News & World Report* article reported that a 1,000 square-foot (93 m2) lawn requires, on average, 10,000 gallons (37,850 liters) per summer. With droughts continuing in the West and expected to increase in severity as a result of global climate change, this is a growing concern.
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To maintain lush lawns, we use a lot of fertilizer—some 70 million tons (64 million tonnes) per year in the U.S. We use more fertilizer on our lawns in the U.S. than India uses on its food crops. Nitrogen fertilizers are produced by converting molecular nitrogen (N2) in the air into ammonia through the Haber-Bosch process, which is extremely energy-intensive, requiring approximately 18,000 Btus per pound (41 GJ/tonne) of primary energy input, which comes primarily from natural gas. Worldwide, ammonia production accounts for approximately 1% of global primary energy use.

Insecticides, herbicides, fungicides, and other pesticides are a growing concern with lawns. U.S. homeowners use 67 million pounds (30 million kg) of pesticides on lawns each year, according to EPA. Our suburban lawns and gardens receive heavier pesticide applications than our agricultural land: between 3.2 and 9.8 pounds per acre (3.6–11 kg/ha) vs. an average of 2.7 pounds per acre (3.0 kg/ha) for agricultural lands.

The nonprofit organization Beyond Pesticides (previously the National Coalition Against the Misuse of Pesticides) reports that of 30 commonly used lawn pesticides, 13 are probable or known carcinogens, 14 are linked with birth defects, 18 have reproductive effects, 20 may cause liver or kidney damage, 18 are considered neurotoxins, and 11 are known or suspected endocrine disrupters. A 1987 paper in the *Journal of the National Cancer Institute* reported that the incidence of childhood leukemia is 6 ½ times greater among families using lawn pesticides than among those who do not, and a 2004 paper in the *Journal of the American Veterinary Medicine Association* found that certain dogs are four to seven times more likely to contract bladder cancer if they live in households that use lawn herbicides than if they live in households that do not—a finding considered especially significant, according to the researchers, because 70% of human bladder cancers develop from unknown causes.

Along with the resource and environmental burdens of producing fertilizers and pesticides, a significant portion of these chemicals applied to lawns ends up in stormwater runoff and in groundwater. According to EPA, 40–60% of the nitrogen applied to lawns ends up in surface water or groundwater. Stormwater runoff from turf is one of North America's biggest sources of water pollution.

Noise pollution is another concern. Lawnmowers, weed whackers, hedge trimmers, and leaf blowers cause significant noise pollution, a very real but often overlooked health hazard (see *EBN* Vol. 10, No. 1).

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Due to the need for all this maintenance, lawns are a huge expense. Homeowners spend roughly $27 billion per year on lawn care, according to the National Wildlife Federation (NWF)—ten times more than we spend on school textbooks. At the business level, the lawn care industry did approximately $61 billion in business in 1997 and has been experiencing roughly 20% annual growth in recent years. On a per-acre basis, maintenance costs for mowing, irrigation, and application of fertilizer and pesticides average $1,120 per year, according to the organization Wild Ones Natural Landscapers.
For more on lawns and turf grass, see *EBN* Vol. 13, No. 4.

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