No Such Thing as a Green Lawn

Contributed by Sarah (Steve) Mosko
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Editor's note: Don't skip this article just because you may not have a lawn to turn into a veggie patch. Mosko provides fabulous background, such as the post-WWII development that "chemical weapons manufacturers funneled stockpiles of compounds used for making poisonous gases and explosives into making pesticides and nitrogen fertilizers." Southern California remains a crazy place, so let's hope Mosko is heard: "The energy required for desalination far exceeds that for water importation." - JL

Which consumes more fossil fuels, lawn maintenance with gas-powered tools or lawn watering?
For residents of Southern California, the
correct answer is watering because of the energy it takes to transport water to the region.

Southern California (SoCal) is a semi-arid desert. Rainfall averages only 15 inches per year, for example, in the Los Angeles area. Local water sources have fallen far short of meeting the region’s water needs for more than a century.

With 2/3 of the state’s rainfall in Northern California and 2/3 of the water demand in SoCal, the State deals with this imbalance by pumping in half of SoCal’s water supply from sources hundreds of miles away, the Colorado River and the Sacramento-San Joaquin Delta.

The Water-Electricity Relationship

Piping water long distances is costly in terms of electricity, especially water imported from the Delta which has to be pumped uphill 2,000 ft to get over the Tehachapi Mountains.

In a first ever analysis of the energy embedded in bringing potable water to residential faucets and hoses in SoCal, a 2005 Calif Energy Commission analysis calculated 11,111 kWh/MG (kilowatt hours per million gallons), three times costlier than in Northern California.
Most of the electricity is for water transportation, much less for water treatment and maintaining water pressure. Every 100 gallons of imported water eats up enough electricity to keep a 100 W bulb lit for 11 hours.

California and the Colorado River are both in the grip of prolonged droughts, and water imports to SoCal from the Delta have been curtailed because of environmental problems there. SoCal’s water

reserves, already at near critical levels, are projected to dwindle further with population growth.

In November 2009, Governor Schwarzenegger signed a package of reform bills which included plans to restore the Delta ecosystem and mandate a statewide reduction of 20% per capita water use by 2020. While these measures might improve the reliability of water supplies in the future, the onus for achieving conservation is placed on water suppliers with no specific pressure on the public to curb wasteful water practices.

According to the Metropolitan Water District of Southern California (MWD), up to 70% of residential water use in SoCal is for outdoor irrigation, and lawns are a principle consumer. Domestic water use in California averages 124 gal/day/person, exceeding the national average by over 25 gal based on U.S. Geological Survey data. Although the number of lawns in California is unknown, 84% of respondents in a year 2000 statewide Air Resources Board survey described having a lawn area, and the San Diego Union recently reported an estimate that residential lawns cover 300,000 acres and annually soak up 1.5 million acre-feet of water.

The most popular grasses in SoCal are fescues which generally require one inch of water per week during dry months and mowing about every other week. This means that modest-sized lawn areas (25 ft x 25 ft) in both front and back yards could consume, in a single month, in excess of 3,000 gallons of water plus the 34 kWh of electricity required to get it there.

In comparison, gas-powered mowing, weed-whacking and edging this same lawn for a month would use about 1/6 the energy equivalent (~6 kWh or 0.2 gallons gas) according to Paul Tukey, founder of SafeLawns.org, a Maine-based non-profit dedicated to minimizing the environmental impact of lawn care. Lawn tools are also significant sources of smog and carbon monoxide.

Lawns consume additional fossil fuels by way of nitrogen fertilizers and synthetic pesticides which are derivatives of natural gas and petroleum. Cornell University professor David Pimentel has estimated that producing the nitrogen in a 40-lb bag of fertilizer with 30% nitrogen content consumes the energy equivalent of one gallon of gas. Lawn chemicals also pollute local waters supplies.

Given the environmental downsides of lawn maintenance, how is it that lawns became a standard feature of the American home, even in arid SoCal?

History of the American Lawn

The ideal of a sweeping green lawn was borrowed from wealthy English estates where groundskeepers were hired to hand-cut the grass with scythes. Before the industrial revolution, the typical American yard was hard-pack dirt spotted with edible or medicinal plants. Native American grasses were ill-suited to mimic the image of the uniformly green English lawn.

In the early 20th century, the U.S. Department of Agriculture and U.S. Golf Association collaborated to develop grass strains that could flourish in American climates although they required hauling water in buckets. The availability of garden hoses and push mowers made lawn maintenance less arduous, but lawns did not become commonplace until the American Garden Club successfully campaigned to reframe the well-manicured lawn as a civic duty.

The close of WWII ushered in the era of modern lawn care. Cheap engines for gas-power mowers became available, and chemical weapons manufacturers funneled stockpiles of compounds used for making poisonous gases and explosives into making pesticides and nitrogen fertilizers.

Water Saving Solutions

Local nurseries offer free classes on drought resistant gardening for those willing to downsize lawn areas and replace with plantings better suited to SoCal's climate. Also, the MWD, through its SoCal Water$mart program, is offering rebates for swapping out grass areas for artificial turf.

Switching to less water-thirsty grasses, like buffalograss, and installing water-saving sprinkler nozzles and weather-smart irrigation controllers – which also qualify for Water$mart rebates – is another way to cut down on water consumption.

Residents of Carlsbad and Huntington Beach are currently wrestling over whether large proposed ocean desalination plants at these sites are viable solutions to the region's water shortage. From an energy perspective at least, desalination makes little sense: The energy required for desalination far exceeds that for water importation, according to the California Energy Commission.

Through public education, the yard lawn should go the way of cigarette smoking: once a status symbol but now little tolerated. Helping SoCal residents see the absurdity in wasting precious water and energy on lawn care might go a long way to establishing a culture of individual responsibility and conservation that could make drastic measures like desalination unnecessary.

Outside of community parks, golf courses and the like, lawns really

have no place in SoCal.

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Editor's anecdotes: Years ago a national magazine advertisement by Chevron showed before-and-after pictures of lawns, the first one without the use of lawn chemical, and the second after the use of the petrochemical. The only difference was that the first one had a lot of yellow dots for dandelion flowers. This was supposed to be bad or unsightly, whereas the plant is not only medicinal and nutritious but beautiful. How offensive, I thought.

For the Arcata, Humboldt town square that has been under much discussion year in, year out, the publisher/editor of the local weekly newspaper utilized a graphics program to create a front page bird's eye view of supposed plans by activists' for a car-free plaza. His rendition made the area look completely green, to the edge of every building, as in a huge lawn. No provision for handicap access, walkways or emergency-vehicle access was even hinted at. This set back the car-free-plaza efforts of the Transportation Safety Committee for the city on which I sat, in 1997-98. The town's citizens have wanted a car-free plaza for decades but never seem to get it, due to certain merchants' influence on the City Council. Nice green lawn? -- no thanks.

For one lawn I had in "cAr"cata," I planted root crops, thinking they would be safer to eat than above ground food getting the brunt of car exhaust. The potatoes and parsnips came up fine, and helped launch Food Not Lawns (there's a book available by that name) - Arcata faction. Interestingly, the parsnip plants formed a glorious high and thick hedge of the most intense green. I can still picture my lovely tree-sitter housemate who took her nude sunbaths behind that hedge of parsnips.
- JL

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