

The American Lawn - The Ultimate Monoculture



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GOD'S TAKE ON LAWNS: AN INTRODUCTORY PARABLE

Imagine the conversation The Creator might have had with St. Francis on the subject of lawns:

God: Hey St. Francis, you know all about gardens and nature. What in the world is going on down there in the Midwest? What happened to the dandelions, violets, thistle and stuff I started eons ago? I had a perfect "no maintenance" garden plan. Those plants grow in any type of soil, withstand drought and multiply with abandon. The nectar from the long lasting blossoms attracts butterflies, honey bees and flocks of songbirds. I expected to see a vast garden of colors by now. But all I see are these green rectangles.

St. Francis: It's the tribes that settled there, Lord. The Suburbanites. They started calling your flowers "weeds" and went to great lengths to kill them and replace them with grass.

God: Grass? But it's so boring. It's not colorful. It doesn't attract butterflies, birds and bees, only grubs and sod worms. It's temperamental with temperatures. Do these Suburbanites really want all that grass growing there?

St. Francis: Apparently so, Lord. They go to great pains to grow it and keep it green. They begin each spring by fertilizing grass and poisoning any other plant that crops up in the lawn.

God: The spring rains and warm weather probably make grass grow really fast. That must make the Suburbanites happy.

St. Francis: Apparently not, Lord. As soon as it grows a little, they cut it... sometimes twice a week.

God: They cut it? Do they then bail it like hay?

St. Francis: Not exactly, Lord. Most of them rake it up and put it in bags.

God: They bag it? Why? Is it a cash crop? Do they sell it?

St. Francis: No Sir. Just the opposite. They pay to throw it away.

God: Now let me get this straight. They fertilize grass so when it does grow, they cut it off and pay to throw it away?

St. Francis: Yes, Sir.

God: These Suburbanites must be relieved in the summer when we cut back on the rain and turn up the heat. That surely slows the growth and saves them a lot of work.

St. Francis: You are not going to believe this Lord. When the grass stops growing so fast, they drag out hoses and pay more money to water it so they can continue to mow it and pay to get rid of it.

God: What nonsense. At least they kept some of the trees. That was a sheer stroke of genius, if I do say so myself. The trees grow leaves in the spring to provide beauty and shade in the summer. In the autumn they fall to the ground and form a natural blanket to keep moisture in the soil and protect the trees and bushes. Plus, as they rot, the leaves form compost to enhance the soil. It's a natural circle of life.

St. Francis: You better sit down, Lord. The Suburbanites have drawn a new circle. As soon as the leaves fall, they rake them into great piles and pay to have them hauled away.

God: No. What do they do to protect the shrub and tree roots in the winter and to keep the soil moist and loose?

St. Francis: After throwing away the leaves, they go out and buy something which they call mulch. They haul it home and spread it around in place of the leaves.

God: And where do they get this mulch?

St. Francis: They cut down trees and grind them up to make the mulch.

God: Enough. I don't want to think about this anymore. Sister Catherine, you're in charge of the arts. What movie have you scheduled for us tonight?

Sister Catherine: "Dumb and Dumber", Lord. It's a real stupid movie about.....

God: Never mind, I think I just heard the whole story from St. Francis.

This story (author unknown) has been circulating in one form or another for many years.

It provides a simplified view of the counter intuitive behavior that accompanies

the modern American lawn.

Introduction:

The American lawn has evolved through history to become the most highly cultivated plant in the country. It appears in its vernacular cultivated form in all 50 states and covers over 32 million acres, more than any other single crop, including wheat, corn, or tobacco (CCA, 2002). For all the energy that feeds lawn production there is little or no benefit from the continual harvest. To better understand how the lawn arrived at such dominance, it is important to review its historical transformation as well as the social and economic forces that have evolved to support the proliferation of a turf covered nation. Within this context it is easier to understand the basic model of energy flow required to support the American lawn.

History:

In the sixteenth century, “lawn” was a term for a naturally occurring open spaces or glades in wooded areas. In the seventeenth century, formal French villas included man



Fig. 1

made ornamental “lawns” and some productive gardens. Practical garden areas provided food and herbal medicines and occasional lawn panels provided spaces for dancing, lounging and romance (Fig 1).

French gardens were a presentation of order and human control over nature, an attempt to show that human intelligence could reveal nature’s hidden order (Borman, Balmori, Geballe, 2001). At that time in history, English gardens shared many of the traits of the French. In the eighteenth century however, the English gardens underwent a change as English society began to develop a new landscape

aesthetic. The formal and structured gardens were replaced by flowing landscape vistas that seemed to continue on to the horizon. Fences were no longer raised above the land but were replaced by a type of sunken fence, the *ha-ha*. Until you came upon it, this fence was not visible, allowing distant meadows and pastures to blend visually. As pollution and disease increased in the cities, designers transformed large areas of rural land into these “created” natural landscapes. Designs were often implemented for elite landowners who would displace entire villages to allow for the creation of an idealized setting. The grass plant was the most prominent design element. Man-made “natural” landscapes eventually dominated the English countryside with vast areas of lawn that thrived in the English climate.

When the British began to colonize North America they brought their landscape aesthetic. It was only a matter of time before they began to force their idealized landscape on the “unruly” new land. They also brought their practices of pastoralism and transformed native forest into pasture planted with imported grass seed. Pasture lawn was not only a rural feature as it began to make its way into the village commons (Borman, Balmori, Geballe, 2001). The commons were used as public meeting spaces, as hanging grounds and as a collection point for livestock. As the common was used more and more as a militia parade ground, the lawn was more intensively cultivated and manicured (Jenkins, 1994). Thomas Jefferson incorporated vast flowing lawns and formal architecture in his plan for the University of Virginia, merging elements of the French and English traditions. George Washington maintained a large grass expanse that extended from his home of Mount Vernon all the way to the Potomac River. Washington

was very intent on keeping this grass short but did not want his lawn to appear as rough pasture. The solution was to drive browsing deer through the lawn to keep it low. Lawns soon began to appear more often in ever expanding American residential areas. In 1841, Andrew Jackson Downing wrote a book titled, *“Treatise on the Theory and Practice of Landscape Gardening, Adapted to North America”*. Downing’s work increased the popularity of small detached houses with illustrations of the home surrounded by lawn and gardens (Borman, Balmori, Geballe, 2001). He equated a badly kept lawn with “rude and barbarous behavior”. He also distinguished suburban living



Fig. 2

from the “barbarous agricultural life” and the “uncivil city” (CCA, 2002). Frederick Law Olmstead (Fig. 3), the Landscape Architect who designed Central Park in New York, and his partner Calvert Vaux (Fig. 4) set the

new standard for American suburban living with their plan for Riverside, Illinois (Fig. 2) (Newton, 1971). Curving tree lined streets with broad front lawns that, like the English landscape, seemed to continue to the horizon, or at least the next intersection. The American lawn was firmly initiated and has since spread from New England to Florida to the Arizona desert (Fig 5).



Fig. 3



Fig. 4



Fig. 5

The Lawn Economy:

Since World War II, suburban growth in the United States has increased in intensity every year. More development brings more lawns, and adds to the loss of forested and agricultural land. At the same time, technology has allowed Americans to transform the lawn into a strictly controlled and manicured plant monoculture; a living carpet. To sustain this lawn; two inches high, no thatch, no weeds, no color variation with a perfect texture, requires enormous amounts of time, energy, money and natural resources.

Why do Americans invest so much to better and maintain their lawn? There are many theories:

- The lawn is an outward expression of the kind of person that lives in the home.
- The lawn is a source of pride.
- The more perfect the lawn, the better the neighborhood.
- Competition to “out lawn” your neighbor.
- The desire to control nature and keep it orderly.
- Peer pressure from your neighbors.
- Lawn care, especially mowing with lawn tractors, connects us to our agricultural roots.

Whatever the reason, our behavior is still being guided by Downing’s words from 150 years ago. As with many well intentioned ideas, we have taken Downing’s example and raised it to the extreme, using any means possible.

Lawn care has gone well beyond weekly mowing and gathering leaves in the fall. Lawns now undergo an intense regime of fertilization, aeration, dethatching, irrigation, over

seeding, and application of herbicides and pesticides.



Fig. 6

To keep up with these needs, there has been an explosion of landscape maintenance companies (Fig. 6) in the



last few decades. Every year “improvements” are made

to lawn equipment, grass seed, fertilizers and pesticides. The promise and apparent goal for all of the associated industries is to provide products that work better, faster and require less effort. Often the new products cost more, use more resources or degrade the overall environment to a higher degree than their predecessors, yet, come spring, stores can’t keep the stuff on the shelves.

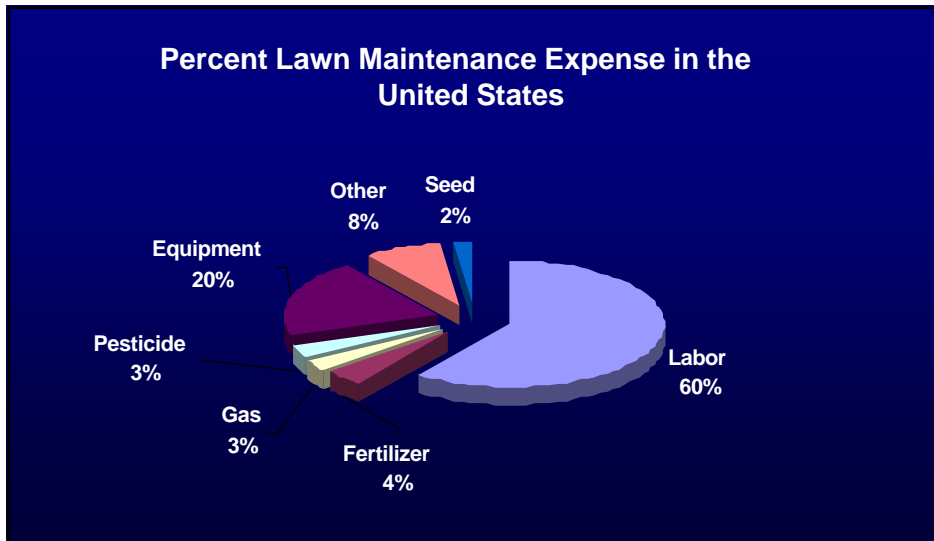


Turf Production:

Lawn turf is typically cultivated in one of two locations. Seed may be planted on the site of the future lawn area or it is planted on a sod farm and imported to the site at a later time. Both methods involve the same energy and resource inputs to establish a healthy lawn. Sod farm turf is much more energy consumptive overall as it must be cut (harvested), rolled or stacked on pallettes, transported by truck to its destination and laid in place. Seeding a new lawn may cost an average of five to fifteen cents per square foot. Sod installation can cost well over ten times that amount.

Lawn Costs:

The average cost for annual lawn maintenance in the United States is around \$400 per household (CCA, 2002). U.S. Department of Commerce data suggests that maintenance expenses breakdown into several distinct categories:



The average annual costs for the major lawn maintenance categories break down as follows:

Labor/Time -	\$240.00
Seed -	\$8.00
Equipment -	\$80.00
Pesticide -	\$12.00
Fertilizer -	\$16.00
Fuel -	\$12.00
Water/Other -	\$32.00

Although the annual economic input for lawn maintenance may not appear to be overly costly to some, it is the actual quantity of energy and resources that are required to maintain current practices that is of greater concern. Functional details of the primary energy inputs and their implementation reflect high resource usage that increases with a

growing population and ever changing technology. A prime example of the disconnection between resource cost and resource value is shown in the price of water. Water is one of the primary resources on which all life depends, yet, in a strictly economic view of lawn maintenance, water, at a maximum of 8% of annual costs, is relatively insignificant.

Primary Energy Inputs:

The primary inputs for annual lawn maintenance have become very industrialized and resource / energy consumptive. Data available for the energy used (in Giga Joules) in the production of some key lawn maintenance inputs at a national level are as follows:

Input	Amount used	Energy Used
Water Production	3.6×10^{12} liters/year	6.1×10^6 GJ
Fuel Production	2.6×10^9 liters/year	9.1×10^7 GJ
Machine Production	22 million machines/year	4.4×10^7 GJ
Fertilizer Production	3.3×10^5 tons/year	1.32×10^7 GJ
Pesticide Production	3.0×10^4 tons/year	4.8×10^6 GJ
Total	N/A	1.59×10^8 GJ

(Input data from Saari, 1999)

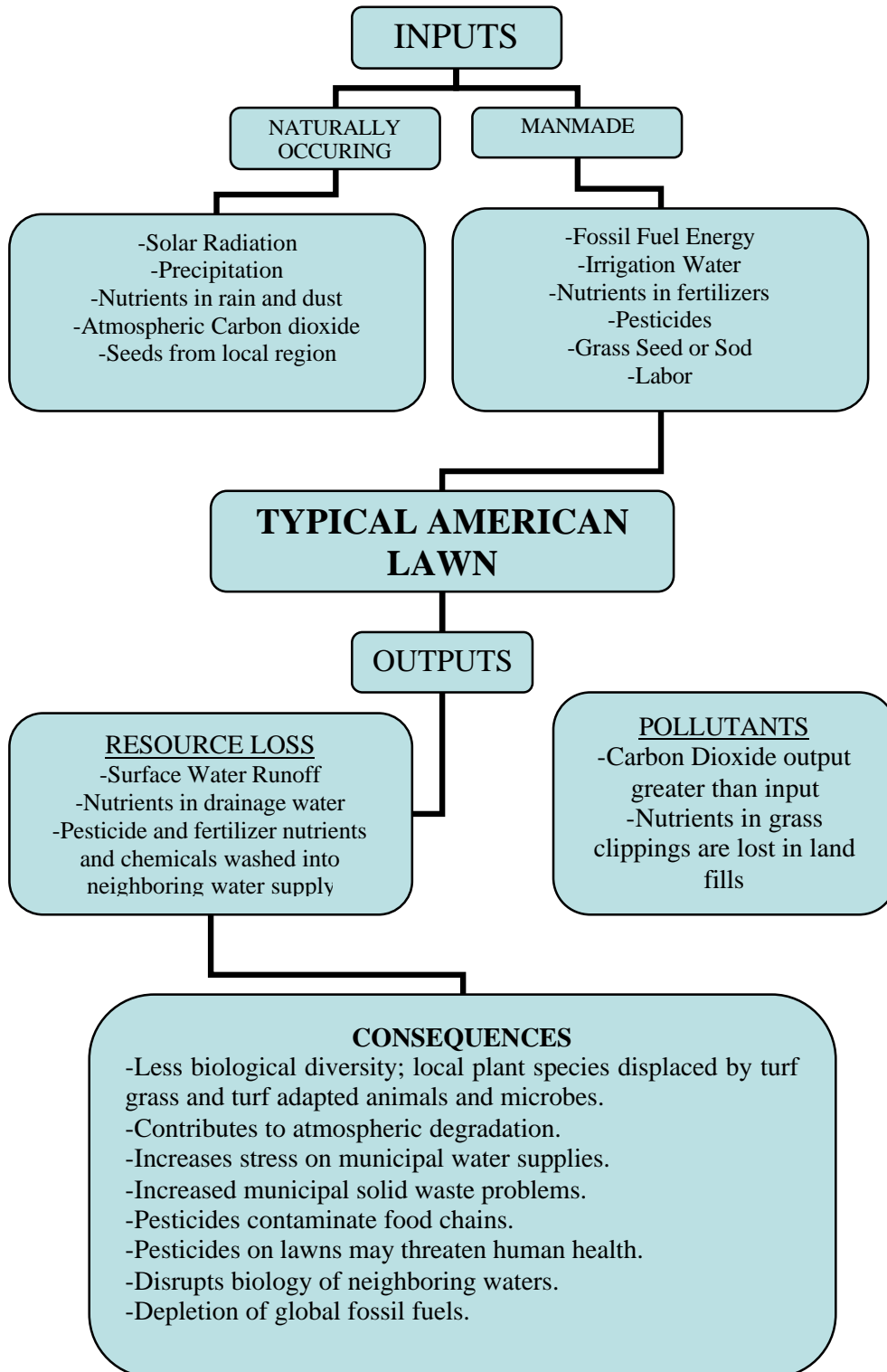
Using the energy input data above, a comparison can be drawn between the cost and resource energy usage for the key inputs listed below:

Input	Percent of Annual Lawn Maintenance Energy Expenditure	Portion of \$400 Annual Lawn Maintenance Cost
Water Production	1.46%	\$32.00
Fuel Production	21.75%	\$12.00
Machine Production	10.52%	\$80.00
Fertilizer Production	3.15%	\$16.00
Pesticide Production	1.15%	\$12.00

The largest disparity that can be seen is between the energy used to produce fuel compared to the cost of production. Although the fuel needed to maintain the average American lawn is one of the lowest annual expenses, the energy required to produce it is the highest of all measured inputs. Water typically used as an input comes through a municipal water system and is often high enough quality for drinking. It is the collection, treatment and redistribution of water that elevates its cost above that of fuel.

Model:

The general energy model of the average American lawn is one of resource and environmental deficit and has long term consequences that persist. The model appearing on the following page details the flow of the major inputs and outputs of maintaining a lawn as well as many of the long term consequences.



Future:

Our society's view of lawns is slowly beginning to change. Many groups with environmental concerns are trying to educate the public in alternative methods of lawn care and the benefits of plant diversity. One such concept is the "Freedom Lawn" which stresses energy conservation, a mixture of native turf species, alternative plant cover and a less industrial approach to lawn maintenance. Although these ideas can save money and resources, social tradition and market forces are barriers to change. Some of the notable barriers come from entrenched beliefs, flawed perceptions or outside influence such as:

- Common lack of tolerance for any broadleaf plants (weeds) in the lawn.
- Flawed perception that healthy lawns should be a deep blue green year round.
- Flawed perception that mulch-mowing causes thatch buildup.
- The promotional power of the chemical, grass seed, and lawn care industries.
- Faulty assumption that chemicals are easy to use and always effective, and that they wouldn't be on the market if there were health risks.
- Lack of knowledge about alternatives to chemical-intensive lawn care.
- Inertia of the current practices and skepticism toward change.
- Lack of patience in our society and the desire to see fast results.

As with all worthwhile changes, a new perception of lawns and lawn care (if not all facets of the natural world) will take time and widespread education. If we adapt to working with the natural systems instead of against them, we will take one step closer to a more sustainable future.

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