



## COST COMPARISON

# Organic vs Chemical Land Management



SYMPTOM  
**Dandelions**



CAUSE  
**Compacted Soil**  
**Low pH**  
**Nutrient Imbalance**

An organic approach corrects nutrient and pH per a soil test and focuses on soil aeration.



A chemical approach focuses on killing the weed. However, this is only a short-term solution.



Unless the reason why dandelions are in the turf is addressed, chemical land managers will more likely than not be back next season to spray again.

**The organic approach saves money on material inputs like pesticides, by providing long-term solutions.**

## DIFFERENTIATING TWO APPROACHES

While chemical land management focuses on treating symptoms, the organic approach is a preventive approach that addresses root causes. In this context, unwanted organisms (pests, including insects and weeds) are the symptoms of a problem caused by poor soil health.

**Organic land management** emphasizes managing weeds and insects through the building of soil conditions and employing cultural practices, such as aeration, overseeding, dethatching, and proper mowing and watering. Nutrients are cycled naturally and, if determined to be necessary by a soil test, soil amendments are used to feed biological life in the soil, which in turn feeds the plant.



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With the **chemical approach**, focus is placed on using synthetic, petrochemical pesticides and fertilizers that adversely affect life in the soil. These chemicals are typically applied based on a calendar date, or by a “see and spray” approach to weed and insect management. Soil tests and cultural practices are not prioritized.

CHEMICAL-INTENSIVE	ORGANIC
<ul style="list-style-type: none"> <li>• Treats <b>symptoms</b>; “see and spray,” ignore underlying conditions that contribute to pest issue.</li> <li>• Pesticides and fertilizers are fossil fuel-based <b>synthetics</b> that are harmful to soil biology and biodiversity.</li> <li>• Does <b>not</b> often focus on cultural practices.</li> </ul>	<ul style="list-style-type: none"> <li>• Addresses <b>root causes</b>; focus on <b>soil health</b> through testing and analysis.</li> <li>• Uses <b>naturally derived</b> fertilizers and pesticides with a systems-based approach, nurturing soil biology and biodiversity.</li> <li>• Prioritizes <b>cultural practices</b> for turf management, such as aeration, overseeding, dethatching, and proper watering.</li> </ul>



# ORGANIC SAVES OVER TIME

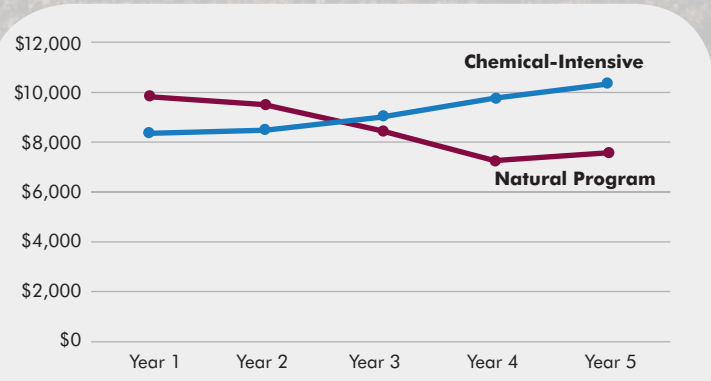
Healthy soil reduces the need for expensive outside inputs

## COST COMPARISONS

A report from the non-profit Grassroots Environmental Education and organic turf expert Chip Osborne, with Osborne Organics, concludes that, once established, **an organic turf management approach results in savings greater than 25% over chemical management.**<sup>1</sup> While initial expenditures over the first two years may be slightly higher, **costs decrease as soil biology improves.** Healthy soil reduces the need for expensive outside inputs.

Harvard University's experience with the organic approach on its campus found similar results. There were initial costs required to train staff, purchase equipment, and improve soil health, but at **maturity costs are now expected to stay the same as its previous chemical-based program.**<sup>2</sup>

Connecticut's Department of Energy and Environmental Protection (encourages residents to maintain landscapes with organic practices. They note, "If your lawn is currently chemically dependent, initially it may be more expensive to restore it. **But in the long-term, an organic lawn will actually cost less money. Once established, an organic lawn uses less water and fertilizers, and requires less labor for mowing and maintenance.**"<sup>3</sup>



The cost to manage a football field using natural programs is less expensive than chemical-intensive programs over time.



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## ORGANIC TRENDS ARE EMERGING NATIONWIDE

In 2019, the City of South Miami completed a two-year pilot program that required city staff and contractors to follow practices intended to eliminate toxic pesticide use, and limited inputs only to organic-certified products. A city memorandum codifying these practices into law describes the success of this approach regarding cost. It reads, "Thus-far, this initiative has been a qualified success, allowing the city to cut down on its waste-footprint significantly at relatively little expense, and providing a model for other local government to use as guidance."<sup>4</sup>



**Healthy soil has a rich diversity of microbial life. Feed the soil, not the plant for long-lasting, resilient ecosystems!**



<sup>1</sup> Osborne, Charles and Wood, Doug. 2010. A cost comparison of Conventional (Chemical) Turf Management and Natural (Organic) Turf Management for School Athletic Fields. <http://www.grassrootsinfo.org/pdf/turfcomparisonreport.pdf>.  
<sup>2</sup> Harvard Facilities Operations Maintenance. 2009. Harvard Yard Soils Restoration Project—Summary Report. See slide 26. <http://www.treewiseorganics.com/HarvardYardProject2-25-09.pdf>.  
<sup>3</sup> Connecticut Department of Energy and Environmental Protection. 2019. Organic Lawn Care: Your neighbors will "go green" with envy! <https://www.ct.gov/deep/cwp/view.asp?a=2708&q=382644#Expensive>.  
<sup>4</sup> Alexander, Steven: City Manager. 2019. City of South Miami Inter-Office Memorandum. [https://beyondpesticides.org/assets/media/documents/SouthMiami\\_FL\\_Organicordinance.pdf](https://beyondpesticides.org/assets/media/documents/SouthMiami_FL_Organicordinance.pdf).





# CONSIDERING EXTERNALITIES

There are costs from the chemical approach not captured by the shelf price of a pesticide bottle or bag of synthetic fertilizer. While chemical manufacturers profit, the public pays a steep price through increased health care expenditures and the need to clean up environmental contamination.

A 2016 literature review determined **the health costs from pesticide use in the U.S. to be \$15 billion annually**. The most significant cost is death due to chronic pesticide exposure, such as fatal outcomes after contracting cancer.<sup>5</sup> The authors indicate that **environmental costs of pesticide use total roughly \$8 billion**, but that is likely an underestimate due to the difficulty in pricing ecosystem services (economic value of nature, such as pollination and nutrient cycling) and obtaining accurate data on wildlife mortality.<sup>6</sup>

A study from Seattle Public Utilities determined that, by moving toward natural and organic practices, some of these external costs can be recouped. Households switching from synthetic to natural practices generate roughly \$75 in ongoing public health, ecological, water conservation, and hazardous waste management benefits each year.<sup>7</sup> Cost savings came primarily from reducing the use of chemical pesticides and fertilizers and the need for irrigation.<sup>8</sup>



**\$15 BILLION**  
The health costs of pesticides

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## CONCLUSION: ORGANIC IS WORTH IT



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Cost concerns of switching from chemical to organic land management should be considered negligible over the long-term. There may be some initial upfront costs for staff training, or the purchase of new material or equipment, but these costs decline significantly as focus shifts to root causes and soil health improves. The transition to organic also captures additional external health and environmental costs that are currently borne by the public at-large.

**Organic land management represents an economically viable approach for individual homeowners, landscapers, local parks departments, and school districts willing to commit to the change in practices organic land management entails.**

<sup>5</sup> Bourguet, Denis and Guillemaud, Thomas. 2016. The Hidden and External Costs of Pesticide Use. *Sustainable Agriculture Reviews*. Vol 19, pp 35-120. [https://link.springer.com/chapter/10.1007/978-3-319-26777-7\\_2](https://link.springer.com/chapter/10.1007/978-3-319-26777-7_2).

<sup>6</sup> Ibid.

<sup>7</sup> Morris, Jeffery and Bagby, Jennifer. 2008. Measuring environmental value for Natural Lawn and Garden Care practices. *The International Journal of Lifecycle Assessment*. Vol 13, Issue 3, pp226–234. <https://link.springer.com/article/10.1065/lca2007.07.350>.

<sup>8</sup> Ibid.