

Ending the Toxic Assault on Soil to Protect Health and the Environment

Soil. We have long understood the importance of soil at Beyond Pesticides, as have those who began advancing organic and regenerative land management systems decades ago. With the escalating dependency on toxic chemicals in land management and the resulting toxic assault on soil, adverse effects to people and the environment emerged, leading to campaigns, past and present, to remove hazardous pesticides from the market.

Part of a larger plan

In reality, an extraordinary number of chemicals should be removed from commerce, regulatory reviews are inadequate, and too many national and state policy makers are unresponsive to daily poisoning and environmental contamination. Federal and state laws compromise health and environment by allowing the use of toxic pesticides that can be replaced by nontoxic practices and products. As a result, campaigns seeking to restrict chemicals must advance a transformative message by shining a spotlight on the full range of institutional barriers, including unprotective risk mitigation measures and regulatory decisions that allow unnecessary hazards, the failure of the political process to curtail chemical use, and the inherent weakness of governing statutes.

Incorporating complexities into strategies

Soil represents both the complexity of the contamination problem and the simplicity of the solution. When we talk about ecological balance and biodiversity, we only need to look to the soil to recognize that meaningful solutions are not achieved by eliminating or reducing individual chemicals, but through a comprehensive shift to an approach that supports nature. In soil, we find tens of thousands of microorganisms, including species of bacteria, fungi, protozoa, and nematodes, all contributing to an ecological system that provides food for plants, maintains a biological balance of organisms, enables the flow of water and gases, and sequesters atmospheric carbon. The contamination of this complex community, whether through small or large amounts of toxic chemical applications, disturbs this balance, inhibiting or destroying the mechanisms at work. Nurturing this ecosystem enables our coexistence with nature.

Getting into the field

Years ago, in addition to working in the policy arena, we began field work in order to provide the practical tools in communities that nurture soil biology, turning education and policy into practice. Decision makers on city or county councils who become educated on pesticide hazards and then embrace the transition to safe parks and playing fields need the technical support to implement organic land management systems that respect the complex biological community in the soil. With these systems, the community will see the benefits that healthy soils offer in cycling the nutrients that turfgrass and landscapes need to flourish. Because land managers are often wedded to chemical-intensive programs that they have used or been taught, the programs typically use synthetic fertilizers that deliver nitrogen, phosphorus, and potassium directly to the plant, while applying pre-emergent weed killer. The managers typically know

the pH and chemistry of their soil, but not the amount of organic matter in the soil. They have tested for soil chemistry, but not for soil biology. However, many of the managers are excited by the prospect of trying an organic approach, either because they are concerned about toxic chemical use, and/or their program experiences ongoing repetitive weed or disease problems.

In this issue, we review the book *The Soil Will Save Us* (2014), which, while focused on agriculture for the most part, captures the science of soil biology, traces the experience of farmers who have transitioned away from chemical dependency, links to the environmental benefits, which includes capturing all the carbon that is contributing to global climate change, and shows competitive and, in most cases, reduced costs and improved productivity. Another important book, *Teaming with Microbes: The Organic Gardener's Guide to the Soil Food Web* (2010), was described in the *Seattle Post-Intelligencer* as follows: "Smart gardeners know that soil is anything but an inert substance. Healthy soil is teeming with life –not just earthworms and insects, but a staggering multitude of bacteria, fungi, and other microorganisms. When we use chemical fertilizers, we injure the microbial life that sustains healthy plants and become increasingly dependent on an arsenal of artificial, often toxic, substances. But there is an alternative to this vicious cycle. We can garden in a way that strengthens the soil food web –the complex world of soil-dwelling organisms whose interactions create a nurturing environment for plants."

This orientation is integral to certified practices under the *Organic Foods Production Act*, which states: (7 USC 6513) Organic Plan (b) (1), "An organic plan shall contain provision designed to foster soil fertility, primarily through the management of the organic content of the soil through proper tillage, crop rotation, and manuring." The National Organic Standards Board, in reviewing allowed materials, must consider "the effects of the substance on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock."

Cultural Shift

With this understanding, we introduce or reintroduce in this issue the idea of bringing back clover as a part of lawns, explaining the biological benefits of this plant in *Taking a Stand on Clover: The benefits of clover to bees, soil biology, and water quality*. Organic practices can achieve a clover-free lawn, but is that always best?



Organic land management is a systems approach that values healthy, biologically active soils to support plant life and provide critical environmental benefits. It is through this soil-based systems approach that we will eliminate toxic chemicals in land management.

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