

On the 50th Anniversary of *Silent Spring*, A Call to Action

Rachel Carson's landmark book, *Silent Spring*, was published in 1962—50 years ago. We celebrate and reaffirm the teachings and message of the book as critical to sustaining life.

In this year, I had the opportunity with the staff and board of Beyond Pesticides to visit Yale University's Beincke Rare Book and Manuscript Library and view Rachel Carson's papers, which includes her letters, papers, and scrapbook with articles about *Silent Spring* that she had clipped, and other documents of the time that related to the topic of pesticides. To a large extent, the work of Beyond Pesticides carries on Rachel Carson's legacy—so to feel her presence, strength, vision, and bravery was a powerful moment. And what better time to touch Ms. Carson's spirit than on the 50th anniversary of *Silent Spring*. With an acknowledgement of her contribution to launching the conservation and environmental movement, in March we held the 30th National Pesticide Forum, *Healthy Communities*, at Yale's School of Forestry and Environmental Studies. (See talks from the conference on the Beyond Pesticides' YouTube channel.)

I also took the occasion of the 50th anniversary to re-read *Silent Spring*. The book is especially important for those who may think that blanket pesticide spraying for food production or insect-borne diseases might at times be necessary and effective, since it reaffirms the importance of thoughtful biology-based strategies that prevent and solve pest problems, rather than exacerbate them. Ms. Carson writes, "[T]he method of massive chemical control has had only limited success and also threatens to worsen the very conditions it is intended to curb." The book certainly has relevancy to today's chemical assault in the wake of both the Centers for Disease Control and Prevention's (CDC) and numerous communities' response to managing the mosquito-borne West Nile virus. (See page 15 in this issue.)

Respecting Nature

Silent Spring is a clarion call for caution, written during the then-emerging chemical age of the 1950's. Ms. Carson introduces the book with her science-based understanding that, "The most alarming of all man's assaults upon the environment is the contamination of air, earth, rivers, and sea with dangerous and even lethal materials." The book catalogs the severe problems associated with our societal embrace of DDT (at that time) and other chlorinated hydrocarbons, organophosphates, carbamates, and phenol as effective and protective tools in managing unwanted insects and vegetation in agriculture, gardens, and homes. Ms. Carson, a marine biologist,

science writer, poet, and author, instructed us to respect nature, support it, harness the benefits it offers to us, and never think that we can overpower it. The real-world examples that she provides in *Silent Spring* are stunning, from impacts on salmon, aquatic organisms, birds, beneficial insects, to humans. She warns us about pesticide uses related to rangeland, utilities' brush control, forestry, agriculture, private lawns, parks, and golf courses.

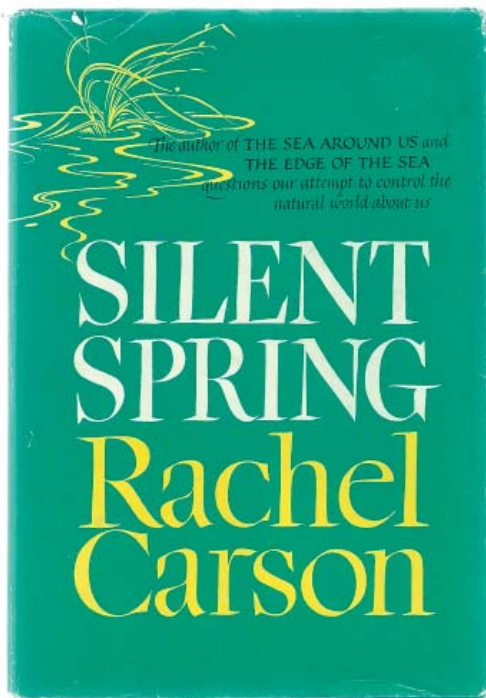
One cannot write off this book as outdated. Quite the contrary. Ms. Carson has given us a life-long guide to understanding the effects of chemical-intensive practices, the importance of our relationship to nature, understanding chemical effects at the cellular level and resulting cancer, neurotoxic, genetic, and reproductive effects, and insect and weed resistance to chemical controls. Most importantly, she gives us a framework for moving us off the chemical treadmill.

Soil and Organic Practices

The case for our individual and collective commitment to growing the organic sector is laid out in *Silent Spring*. And, the *Organic Foods Production Act*, like *Silent Spring*, zeros in on the importance of protecting and nurturing the soil. Noting that, "[T]he most essential organisms in soil are the smallest—the invisible hosts of bacteria and of threadlike fungi," Ms. Carson writes, "[I]f our agriculture-based life depends on the soil, it is equally true that soil depends on life, its very origins and the maintenance of its true nature being intimately related to living plants and animals." She continues, "What happens to these incredibly numerous and vitally necessary inhabitants of the soil when poisonous chemicals are carried down into their world, either introduced directly as soil "sterilants" or borne on the rain that has picked up a lethal contamination as it filters through the leaf canopy forest and orchard and cropland? Is it reasonable to suppose that we can apply a broad-spectrum insecticide to kill the burrowing larval stages of a crop-destroying insect, for example, without also killing the "good" insects whose function may be the essential one of breaking down organic matter? Or can we use a nonspecific fungicide without also killing the fungi that inhabit the roots of many trees in a beneficial association that aids the tree in extracting nutrients from the soil?"

This subject, of course, does not pass without attention to the value of earthworms and bees and other pollinators. Ms. Carson criticizes the lack of attention to protecting vegetative growth, along roadsides and fields, and fears the lack of importance given to the 65

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“By their very nature, chemical controls are self-defeating, for they have been devised and applied without taking into account the complex biological systems against which they have been blindly hurled. The chemicals may have been pretested against a few individual species, but not against living communities. . . To assume that we must resign ourselves to turning our waterways into rivers of death is to follow the counsel of despair and defeatism. We must make wider use of alternative methods that are now known, and we must devote our ingenuity and resources to developing others.” —Rachel Carson, *Silent Spring*

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species of shrubs and vines in the eastern states that are an important source of food for wildlife. She raises concerns about the senseless destruction of habitat, explaining her concern as follows: “Honeybees and wild bees depend heavily on such “weeds” as goldenrod, mustard and dandelions for pollen and serves as the food of their young. Vetch furnishes essential spring forage for bees before the alfalfa is in bloom, tiding them over this early season so that they are ready to pollinate the alfalfa. In the fall they depend on goldenrod at a season when no other food is available, to stock up for the winter.” Ms. Carson says, “Such plants are “weeds” only to those who make a business of selling and applying chemicals.” And yet, she continues, “The “agricultural engineers” speak blithely of “chemical plowing” in a world that is urged to beat its plowshares into spray guns.”

The Real Cost of Toxic Chemicals
While toxic chemicals for land management are sold to the public and land managers as more cost-effective, Ms. Carson says, “[W]ere the true costs entered, the costs not only in dollars but in the many equally valid debits. . . , the wholesale broadcasting of chemicals would be seen to be more costly in dollars as well as infinitely damaging to the long-range health of the landscape and to all the varied interests that depend on it.” She implores us to consider in questions of agriculture and landscape management the interconnectedness of nature. The book provides example after example of the horrific death and destruction caused by pesticides that disturb the relationships between predators and prey, which escape from natural controls and rise to pest status. In another

context, she describes the connectedness as, “. . . the house that Jack built sequence, in which the large carnivores had eaten the smaller carnivores, that had eaten the herbivores, that had eaten the plankton, that had absorbed the poison from the water.”

Fifty years after the publication of the book, true pesticide costs are still not calculated by regulators who espouse the “benefits” of the chemicals they register as presenting “reasonable” risks. We are still not asking these questions when EPA, advancing chemical-intensive practices, registers pesticides that are marketed with synthetic fertilizers that create the cycle of dependency on deadly chemicals, which continuously threaten the natural balance. However, in the spirit of Rachel Carson, we are instructed by the federal organic law to ask these questions in regulating certified organic systems.

Effects at the Cellular Level

Ms. Carson writes about the impacts that pesticides have at the cellular level, turning our attention to the “functioning of the individual cell in producing the energy that is the indispensable quality of life.” She says, “The extraordinary energy producing mechanism of the body is basic not only to health but to life. . . Yet the nature of many of the chemicals used against insects, rodents, and weeds is such that they may strike directly at the system, disrupting its beautifully functioning mechanism.” Of course, she relates the science of exposure to nerve damage, enzyme imbalance, liver damage, genetic damage, reproductive problems, cancer (explaining there is no safe level), and psychological effects.

On exposure, Ms. Carson writes, “The contamination of our world is not alone a matter of mass spraying. Indeed, for most

of us this is of less importance than the innumerable small scale exposures to which we are subjected day by day, year by year, like the constant dripping of water that in time wears away the hardest stone. . .”

Change Is Possible

On cancer, Ms. Carson posits the challenge, “Isn’t it impossible even to attempt to eliminate these cancer-producing agents from our world? Wouldn’t it be better not to waste time trying, but instead to put all our efforts into research to find a cure for cancer?” In response, she cites Dr. Hueper (National Cancer Institute), who equated preventive management of disease organisms through public health measures in the 19th century to the need to eliminate cancer causing pesticides in the 20th century, rather than simply looking for “wonder drugs.” The cancer cure was elusive in 1962 as it is today, so the prevention and elimination strategies take on even more urgency.

In conclusion, Rachel Carson quotes author F. H. Jacob in England as saying, “The activities of many so-called economic entomologists would make it appear that they operate in the belief that salvation lies at the end of a spray nozzle. . . that when they have created problems of resurgence or resistance or mammalian toxicity, the chemist will be ready with another pill. That view is not held here. . . Ultimately only the biologist will provide the answers to the basic problems of pest control.”



Ultimately, there is no better case for organic than *Silent Spring*.

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