

Chapter 1

Landscaping the Sustainable Way

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Look at nature. Nobody gardens nature. Nature quietly thrives, while down in town, everyone takes up arms every Saturday morning — hacking, decapitating, shearing, poisoning, ripping, and tearing their yards, not to mention sweating and swearing. Lucky for you, this book is all about how to develop your landscaping along natural models so you can enjoy lovely, environmentally friendly surroundings and get a break from the battle.

This chapter gives you an overview of what sustainable landscaping is, why it matters, how it works, and how you can transform your property into a beautiful, functional sustainable landscape. If you start with this chapter, you'll have a good grasp of the basics, and then you can move on to whatever sections of the book apply to your current situation or whatever you're curious about.

Getting Up to Speed on Sustainability

At one time, all gardens were simple. They were made up of plants, soil, and natural building materials. They didn't cost much to create or care for. Their effect on the environment was positive, because they didn't cause strip mining, release poisons into the atmosphere, or consume huge quantities of fossil fuel. They were sustainable before the word was popular because they could go on essentially forever.

That's what sustainability is all about. Gardens can be that way again. All over the world, people are getting wise to the fact that they have an alternative to the dysfunctional industrial/commercial landscaping model that's been jammed down our throats by advertising and ignorance.



Sustainability is a better way. It's not perfect, but by doing things right, you'll make a huge and important difference. Your land is your opportunity to help create a better future.

What the heck is sustainable landscaping, anyway?

Sustainable landscaping isn't about a look. A Japanese garden can be sustainable. So can an English garden or a desert garden or a woodland garden. A sustainable landscape can be formal or informal, geometric or naturalistic, simple or complex. Other than planting vast swards of mowed lawn in a dry climate, you're pretty much free to choose whatever look you want as long as you follow the principles of sustainability, setting up a smoothly functioning ecosystem that makes minimal demands and creates minimal problems.

The key ideas that make sustainable landscaping work are simple and easy to put into practice:

- ✓ **Living system:** Nature is a system of interrelated subsystems that work together to form a smoothly operating whole — a living, functioning ecosystem. There are many examples of living systems, such as your body (made up of various organs), a forest (filled with many kinds of plants and animals), and the ocean (teeming with millions of interdependent life forms). If you make your landscape a highly functioning system patterned after the ways of nature, it will operate like nature — without the need for much control or intervention and without harming any other living system.
- ✓ **Homeostasis:** *Homeostasis* is a fancy word for *stability*. It's the balance of forces in a living system, with no force getting out of control to cause harm. Consider your body, which more or less functions automatically. You don't need to will your heart to beat or your eyes to see; those things just happen. With a little care from you, all is groovy. The landscape system can work this way, too, if you set it up right.
- ✓ **Deep design:** Homeostasis doesn't happen by accident; it's a product of good design. I'm not talking about the too-common superficial design that creates pretty but dysfunctional gardens. Instead, I mean design that looks beneath appearances to develop a beautiful landscape that also really works. Deep design takes special skills — skills that you discover in this book.

✓ **Cyclical design:** Nature recycles everything. As the Buddhist master Thich Nhat Hanh once said, “When I look at a rose I see compost; when I look at compost I see a rose.” Conventional manmade systems are linear. Consider the process:

1. Get a virgin material from nature (usually with disastrous effects at the source).
2. Use toxic and energy-intensive processes to alter it so much that it can never go back to nature.
3. Use it one time.
4. When the material’s too-short useful life comes to an end, dispose of it in a landfill, where it plugs up the works of yet another formerly living system.

Nature has been very patient with us, but this linear game is just about up. Mother Nature hates it, and besides, she’s running out of merchandise. Going back to the infinite and ancient cyclical way of life makes your garden one with nature, less troublesome, and more enduring.

✓ **Harmony with the local environment:** There are no nonlocal conditions. Your property is unique, with a particular soil type, microclimate, exposure, vegetation, and other factors. By choosing plants and other elements that are well suited to these particulars, you set up a robust ecosystem that will be happy with its lot in life. (Conventional gardens rely on ill-adapted plants and other elements and then depend on continual input of resources to keep from failing.)

✓ **Careful management of inputs and outputs:** The sustainable landscape thrives on what nature offers. It makes efficient use of resources such as building materials, water, and fertilizer. What goes in and out of the landscape is minimized, so as many effects as possible are beneficial.

✓ **Consideration of on-site effects:** What happens on-site is carefully considered at the design stage. Natural features such as soil, native plants, and animal habitat are preserved. All improvements must meet the test of being good players. Each element of the newly formed ecosystem must play a beneficial role: making oxygen, sequestering carbon, providing food, improving the climate inside dwellings, preventing erosion, or protecting against wildfire, to name a few. To minimize negative effects, toxic materials aren’t used; neither are energy-intensive processes, noise-generating machinery, or thirsty plantings.

✓ **Consideration of off-site effects:** What happens off-site is important too. By that, I mean that there should be no damage at the source of materials. Your landscape won’t be truly sustainable unless it leaves forests intact, mountains unmined, oil unburned, and workers safe and happy.

- ✓ **Benefits beyond sustainability:** Finally, a sustainable landscape should seek to go beyond mere sustainability. As visionary architect William McDonough observed, we shouldn't just be less bad; we should be good. Landscapes offer so many benefits to users and to nature that it's easy to use the power of the sun, the rain, and the soil to create a paradise for all living beings. You can do that — and you have no reason not to.

Why sustainable landscaping matters to the environment

Where do I start? The traditional landscape is an environmental train wreck:

- ✓ It fragments and destroys native habitat.
- ✓ It consumes natural resources.
- ✓ It causes strip mining, clear cutting of forests, and other negative effects at the source of materials.
- ✓ It introduces nonnative plants that invade and devastate wild ecosystems.
- ✓ It wrecks waterways and groundwater through the leaching of pesticides, herbicides and fertilizers. (Of the nitrogen applied to lawns, 40 percent to 60 percent ends up in the water.)
- ✓ It increases runoff, which results in urban flooding and further damage to waterways.
- ✓ It fills canyons and landfills with waste.
- ✓ It increases global warming through the use of fossil fuels.
- ✓ It wastes precious water to keep useless ornamental plants and lawns alive.
- ✓ Outdoor power equipment creates noise in every neighborhood.
- ✓ Pesticides kill 60 million to 70 million birds each year, not to mention their negative effects on beneficial insects and other wildlife.
- ✓ Pesticide use in the United States is ten times greater for landscaping than for agriculture.

Cowabunga! What a mess! Added to these effects are those on human well-being:

- ✓ The health of one in every seven people is affected by pesticides.
- ✓ Air pollution caused by pesticides and fossil-fuel use damages everyone's health.
- ✓ Each year, 60,000 to 70,000 severe accidents and fatalities are caused just from lawn mowing.



This has got to stop. Sustainable landscaping addresses all these issues by cleaning up the system, making these effects unnecessary, and respecting the environment. Simply put, sustainable landscaping is good for the environment because it does things the right way.

What's in it for you

Suppose that you don't even care about the environment. Fine. You still should have a sustainable landscape because it's cheaper, easier to care for, more satisfying to live with, and much more interesting.

You'll save money because all your inputs are significantly reduced. You'll spend less on materials, water, fertilizer, gasoline, labor, dump fees — the works. Sustainable landscaping is a penny-pincher's delight.

Because sustainable landscaping makes so few demands on you, you spend less time keeping it from falling apart and more time enjoying it (or enjoying something else you love). If you've busted your chops on a conventional landscape for a while, you know how much work it can be. Imagine that work not happening. That's what converting to a sustainable landscape can do for you.

Finally, when you see how beautifully everything works, you'll come to admire the elegance of a finely tuned system. It's soothing to know that things are working smoothly without much help from you.

Doing Your Part: What It Takes to Make a Sustainable Landscape

I assume that you'll be fairly involved with your project, even if you hire someone to do some of the work. That's why you bought this book, right? Well, here's an overview of what it takes to make your landscape sustainable, including tips on how to make the most of your relationship to the job.

Taking the time to do things right

Slow down. Whether your project is small or massive, the practice of deep design (refer to "What the heck is sustainable landscaping, anyway?" earlier in this chapter) demands careful observation and attention to detail. I've been told that in ancient times, Japanese garden designers sat on the site every day, all day, for a year, carefully noticing the way the sun moved; how the trees responded to wind; what animals visited; and many more subtleties that can

be grasped only through quiet, intense scrutiny. As the seasons changed, the designers learned in summer what they could never learn in spring, and so on through the full annual cycle. Only after that apprenticeship did they dare to begin the design process. Whether you opt to follow the ancient ways or not, do give yourself time to understand what you're working with. Attention to detail pays off in many ways.

Using your skills to lower your bills

If you're planning to do the work of building a whole new landscape, you can look forward to a lot of physical effort. Even a smaller project can be hard work. Landscaping isn't crocheting doilies. On the other hand, it can be a wonderful opportunity to get outside and get some exercise, and it can be a lot of fun too.

Busting some sustainability myths

As with anything new, concerns come up. You'll be making a big, expensive, long-term commitment to your landscaping, and you need to know that this isn't some goofy New Age idea that doesn't really deliver the goods. Here are some facts to set your mind at ease:

✓ **Myth:** Sustainable landscapes are ugly.

Truth: Plants in a sustainable landscape are healthy and vigorous, and have room to grow into their beautiful natural forms. Structures are made from natural materials, with their inherent beauty showing through. Sustainable landscapes are green, flowery, fresh, and lovely — not parched gravel beds with thorny, nasty-looking plants (unless that's what you want, of course).

✓ **Myth:** Sustainable landscapes are expensive.

✓ **Truth:** All landscaping is expensive, but sustainable landscaping is less expensive for a couple of reasons:

✓ Because the sustainable approach emphasizes plants over hardscape, you save money on the installation. Plants are cheaper than concrete.

✓ Even more important, the ongoing care of the landscape will be much less because it is undemanding of resources and labor.

✓ **Myth:** Sustainable landscapes don't work.

Truth: The whole point of developing a landscape sustainably is to create an ecosystem that functions smoothly without much effort on your part. When you look at what's needed to keep a conventional landscape in one piece — the mowing, watering, pest control, pruning, and all the rest — you see that *conventional* landscaping is what doesn't work.

First, take stock of your ability to dig ditches, lift heavy stuff, and generally grunt out (weekend after weekend for a really big project). Balance that effort against the cost of paying someone else to do some or all of the work. If you do want to tackle it, be sure you know how to work safely, and check with your doctor if you have any qualms about your fitness level. Stay safe, okay?



Doing the work yourself can save up to half the total cost of the project. But before you leap in, it's helpful to assess your abilities. You may know how to run a tractor or sweat copper pipe or program an irrigation controller. But you can also get into things you don't know how to handle. This book, and its companion volume *Landscaping For Dummies* (by Phillip Giroux, Bob Beckstrom, Lance Walheim, and The Editors of the National Gardening Association), will help you to develop skills you may not have. If there's some part of the project that you can't or don't want to tackle, hire an expert. Paying someone else to do the work is cheaper than having to do it over. See Chapter 3 for some guidelines on when to do it yourself and when to hire a professional.

Getting a grip on costs

You have lots of variables to consider, and costs vary wildly depending on the kinds of improvements you'll be making. A flagstone patio can cost 20 or 30 times what a ground cover would for the same area, for example, and generally speaking, landscaping an entire yard front and rear can set you back the price of a new car or two. But many smaller projects and improvements won't break the bank.



No matter the size of your project, you can save tons of money by doing the work yourself and by tapping the waste stream for materials whenever you can. See Chapter 2 for some inspiring waste stream resources.

Developing a good tight budget is difficult when you aren't sure what you'll be doing, so develop your design first. Then do your homework. Talk to contractors, shop for materials, and also consider the value of your own time. Don't get too detailed at this stage. When you know exactly what you'll be doing, you can crunch the numbers to determine the total expense and adjust your plan as needed.

If you'll be doing an entire property, this number will be big. If the number is too big, consider how you could lower costs without compromising quality (smaller plants, less hardscape, and a manual irrigation system, for example).

Or break the project into phases spread out over a few months or even years. For instance, you may tackle just the front yard during the first phase, and then follow up later with paths, patios, lighting, and other features. You have lots of options that help keep the money end of things on track.



Keep track of expenses with a spreadsheet. Log all the elements of the project and what they cost: the tractor used for demolition, tree trimming, topsoil, irrigation equipment, contracted labor (which may be the whole job), incidental expenses like a portable toilet for the workers, and so on. The handy thing about having costs set up this way is that you can keep updating your costs as your design goes through its inevitable changes. You can also use it to track actual costs as the project progresses. Check out Chapter 3 for more help keeping cost in mind.

Scheduling your project

Consider the scope of the work and how much time it will take you to do it or have it done. It's amazing what you can accomplish in a weekend or two, if you've planned things out thoroughly in advance. Not every sustainable landscaping project has to take months out of your life. Looking at the sidebar on the sequence of landscaping operations, you'll see a lot of tasks. Evaluate how many of those tasks are part of your project. A smaller job may involve only a little demolition, some planting, and a layer of mulch. A full-yard remodel could require work in every category and therefore call for some serious advance choreography.

Whatever the scope of your project, keep in mind that many landscaping tasks are dependent on the time of year. If you'll be getting professional help with some or all of the job, talk to your contractor about the timing from his or her perspective. Think about your cash flow, too, if that's a consideration.



For a large project, develop a project calendar, using the sequencing information in the sidebar. Schedules can get off track, of course, but at least you'll have an action plan to work from.

Planning and Design: The Keys to a Sustainable Landscape

When it comes to making your landscaping work properly, good design is everything; it determines once and for all how the system will work. Design is especially important when you have big plans in mind. It's detailed, but it's a lot of fun too.

Sequence of landscaping operations, start to finish

Here's an overview of this whole big monster of a process of turning your nasty ol' yard into a sustainable landscape. Every project has its own particular aspects, quirks, and special needs, but some universals apply to all projects. Landscaping isn't an exact science, and many things can alter the passage from ugly to lovely. You may already have guessed that some of these steps are done concurrently with others. You may still be designing certain aspects of the project while you're building others, for example. (In fact, you probably will be.) Whatever the particulars of your project,

the following table will help give you an idea of how things usually go.

Certain sequences are pretty hard to argue with. You have to do your demolition before you build anything new, and it's a whole lot easier to do the grading before the plants are planted and the irrigation is in. Other sequences are more flexible. You may install a patio in one corner of the yard before you even touch another corner. As for design, it can be a continuing process of thinking, learning, and reconsidering throughout the course of the entire project. Overall, though, if you follow this chain of events, you'll be fine.

<i>Category</i>	<i>Tasks</i>
Planning and design	Site analysis, landscape plans, budgeting
Permits and approvals	Building permits, zoning approval, and so on
Weed control	Grubbing weeds, sheet mulching
Utilities location	Call the free One-Call coordinating service at 811 (or visit www.call811.com) for line location
Demolition	Remove plants, structures, and so on
Tree trimming	Prune existing trees
Earthwork	Grading, excavating, importing soil
Drainage	Underground drains, dry streambeds, and water-harvesting features
Erosion control	Netting, silt fencing, hydromulching
Water mains	Piping, backflow prevention device(s), valves, hose bibs
Electrical	Irrigation control wires, lighting wires, buried conduits
Sprinklers	Lawn and other sprinklers
Heavy construction	Boulders, retaining walls, fences, and so on
Flatwork	Driveway, patios, walkways
Plantings	Trees, shrubs, ground covers
Drip system	Drip tubing and emitters
Mulching	Cover ground with mulch
Lighting	Install fixtures, transformers
Site furnishings	Benches, tables, artwork, potted plants

Getting to know the site — and your needs

Responding appropriately to conditions is essential to developing the kind of finely tuned landscape that's easy to live with. The first step is making friends with the site so you understand what you're dealing with. Start by spending some quality time with your yard. (It's been a while, hasn't it?) Go outside when you have the time to just hang out and quietly observe the many characteristics of your property: the path of the sun, the condition of the soil, the health of existing plants, and good and bad views, to name a few aspects. Take photos, make notes, and move around to see things from as many perspectives as possible. Get professional advice if you have special concerns, such as an unstable hillside or soil problems. See Chapter 4 for an in-depth discussion of site analysis.



But understanding the site isn't enough; you also have to learn what you want and need. Rushing into the design phase without going through this process leaves you without the information you need to make good decisions. Think about your needs and desires. What do you want from the finished landscape? Make a simple list. Do this outdoors so you can imagine the possibilities better. If you stand in your backyard and dream about what you need, for example, you might list privacy, a shady place with a hammock or a patio, a play space for the kids, a vegetable garden, a few fruit trees, secure fencing, and a water feature. Take the time to get everything down on paper. Include your family in the process, and make sure that everybody gets heard.

Scoping out sustainable avenues of research

I'll be the first to admit that this book is almost all you need to create and maintain a sustainable landscape. Nonetheless, there are some other great resources out there that you should know about. Local government agencies, such as the public works department, often have community-specific resources and tips on water conservation, waste reduction, and other aspects of sustainable landscaping. Visit the gardening section of your local bookstore. Talk to local nurseries and landscape supply stores.



And of course there's the Internet, which is rich with timely information on all aspects of sustainable landscaping (but also rife with unreliable and inaccurate information). I refer you to reliable Web sites throughout this book. But you can also search on a particular topic, such as integrated pest management or water harvesting, and turn up more information than you could ever even read. To cull out the junk and find the best information, focus on university

Web sites (those with the suffix “.edu”), nonprofit sites (with the suffix “.org”), and some government agency sites, such as the Environmental Protection Agency (these sites use the suffix “.gov”). Commercial sites can be great too, but watch out for sales pitches disguised as information.

Developing a design

Design deserves your best thinking because it determines the outcome of the project and how it will function over time. The design phase is a time to slow down and pay attention. Design goes from the general (“I think I want a vegetable garden”) to the specific (“I want four 4 x 10 raised stone beds in the northeast corner of the back yard with six kohlrabi plants, a dozen rutabagas, and five Bad Boy tomatoes”).



Designing a sustainable landscape is rigorous, but anyone can do it. I discuss design in detail in Part II of this book. For now, here's an overview of the process:

- ✓ **Creating the conceptual design:** When you understand the site and your own needs, you're ready to take a first stab at putting everything together. This draft is called the *conceptual design*. You create it in steps, starting with a bubble diagram and moving through field measuring, a base sheet, and ending with a concept plan.
- ✓ **Refining your design:** When you have a good understanding of how the elements fit together, you can begin to work on all the little details. What will that patio be made of, and precisely what will its shape and location be? Which tree will go on the east side of the house, and what size will it be at planting time? What species of perennials will go in the front border, how many of each kind, and what container size? You can even develop a series of individual plans that detail the construction, planting, irrigation, and other phases of the work. These plans will help you refine your ideas and guide you through the long process of constructing the landscape, and they'll help you share your vision with a contractor if you decide to hire a pro.

Putting Your Plan into Play

It's time to get hot and dirty! Are you really ready for this? Okay. You can do it. Put on those work boots and a good hat, grab your gear, and get out in the hot sun (don't forget sunscreen!). The work won't be easy, but it won't kill you either. Keep the dream of a beautiful new garden alive while you work. And if you poop out, you can always hire eager professionals to pick up where you left off.

Gathering the tools and materials you need

A landscaping project really is many projects rolled into one. Depending on the scope of your project, you may be doing demolition, moving and grading soil, installing irrigation and drainage systems, building all sorts of structures, planting plants, mulching, and doing a lot more. Some tools, such as shovels and rakes, are common to many of these tasks, and you'll get to know them quite well indeed. Other jobs — particularly hardscape construction (see Chapter 14) — require special and sometimes costly tools. You probably already have the basic tools; others can be rented or borrowed. (Buying tools that you only use once or twice isn't very sustainable, is it?)



The right tools make the job easier and safer, and the outcome will be more like what a pro would do. As for materials, you'll be getting these from a variety of sources: lumberyards, concrete plants, nurseries, landscape supply stores, stone and masonry dealers, irrigation supply stores, and others. Scout local resources, looking for places that have a commitment to supplying sustainable materials whenever possible. Try to buy locally, but if a more sustainable material is available elsewhere, it may be a better choice environmentally. Don't forget to tap the waste stream for as many materials as you can (see Chapter 2). Sustainable means buying as little as possible.

Ensuring success along the way

If you're tackling a small project, a day or two may be enough to get the job done. Some projects require more time to get ready than it takes to do the actual work. Plan ahead, gathering up all the materials and tools you need in advance of the big day. Keep in mind that some materials, especially plants, may not be available exactly when you need them, so call around at least a week in advance to be sure you'll have what you need.

If you're taking on an entire landscape remodel, pace yourself. It isn't a one-weekend project. Many people burn out partway through. But *you* have to be sustainable too. If you aren't accustomed to physical work, build up to it slowly, and give yourself lots of breaks.



The best outcome is the result of ongoing design decisions made as the project unfolds. Just because you turn your body on to do the physical work doesn't mean that you turn your mind off.



As you go, don't be afraid to rethink the details as new aspects of the work unfold. Details matter, and they aren't all evident in the design stage. Stay open to new ideas.

Maintaining the Land Nature's Way

You don't have to be a great gardener to have a great garden. Caring for a sustainable landscape should be much easier than caring for a conventional one. It's been designed with low maintenance in mind, remember?

The first year will be somewhat demanding as you nurture your new baby along to maturity, but maintenance will get much easier after that. By contrast, a conventional garden — with its many oversize plants, susceptibility to pests and diseases, and generally entropic nature — can get harder and harder to live with over time.

Even sustainable landscapes require some maintenance, but it's along the lines of removing dead flowers, picking fruit, tidying up a bit, and gently nudging things in the right direction now and then. The work is nonviolent, quiet, and fun. For more information on maintaining your sustainable landscape, flip to Chapter 20.

Minimizing the effects of maintenance, on- and off-site

Conventional maintenance does huge damage to the environment. Every year in the United States alone, we use 800 million gallons of gasoline just to mow lawns — and lots more to power other equipment, such as trimmers, blowers, and chain saws. Power equipment also generates significant air and noise pollution.

The 67 million pounds of pesticides used annually on American lawns destroy native and beneficial insects, cause air pollution, and sicken people and pets. Herbicides and fertilizers also harm the environment.

The result is a mess, but things don't need to be this way. By building a landscape that needs little care, adopting organic methods that don't use harsh chemicals, and using hand tools instead of power equipment, the sustainable landscape becomes a place of peace, purity, and productivity, not a war zone. You find tips for how to do this in Chapters 20, 21, and 22.

Cutting out the chemicals

The reason that conventional gardens depend on chemicals is that they aren't set up to be durable and naturally resistant to pests and diseases. Gardeners often use chemicals because they don't know about natural alternatives or don't believe that natural solutions could possibly work as well. Actually, the opposite is true. Follow the tips on natural weed control and integrated pest management in Chapter 21, and stick with organic fertilizers (see Chapter 22). You'll be safer; so will your family and the environment.

Keeping costs down

Because so much less care is involved, costs drop dramatically in sustainable landscapes. It's easy to prove that around 80 percent of the total cost of a conventional garden is for maintenance over a 20-year life span. That adds up to a huge number — one that most homeowners are shocked to see, realizing that their property is eating up their life savings month by month. In a sustainable system, the cost of everything is less because you have less to do and fewer inputs to provide. Even small savings can add up to make a huge difference in the overall cost of the project.