

# *Sustainable Landscapes for Environment's Sake*



When pests and diseases attack, many gardeners feel conflicted. Even the most diligent stewards of the environment feel pressure to reach for a spray bottle when their babies are under attack. Indeed, desperate times may warrant extreme measures. However, every action comes with a consequence. More chemical use equals more environmental risk. Nature's own system for preventing epidemics is compromised. Luckily, there are other options. Prevention begins the moment you begin day dreaming about beautiful gardens. Chances are, there are no fungi on the roses in your mind's eye. Maybe there should be!

Nothing is more important than choosing the right plants for a given location. Light and soil requirements vary greatly from species to species. Sedums are, without a doubt, some of the easiest perennials to grow. While they thrive in full sun with even moisture, they can tolerate just about anything but full shade and wet soil. Stick them at the bottom of a hill, underneath the canopy of a large tree, and you'll think you have the worst plant ever. What you're seeing is plant depression. Imagine yourself living in a house with no windows, sloshing through water as you walk from room to room. Such conditions would likely cause damage to your mental and physical health. Stress weakens immunity in all forms of life. Pests generally pick on the weak before they tackle the strong, adding insult to injury. Another problem occurs when unhappiness is misdiagnosed as a pest or disease problem. No amount of pesticide will treat horticultural depression. Harmony must be achieved between the environment and its occupants.

One of the best ways to obtain accurate information about plants is to purchase a good book. Ideally, this book should be specific to your state or region. A shady spot in Florida is different from one in Minnesota. Advice on the tube and the internet may be coming from a completely different geographical area. Choose your sources carefully. Websites like [mnlandscape.org](http://mnlandscape.org) and [extension.umn.edu](http://extension.umn.edu) are excellent. The prior is put out by the Minnesota Nursery and Landscape Association, the latter by the University of Minnesota. Both are loaded with information.

Don't get too depressed if your favorite plants won't work where you envisioned them. Narrowing down your options is usually much harder than finding plants you like. Contemplate what you like about your favorite plants. Color and shape are probably the easiest characteristics to substitute. Exact fragrances are difficult to duplicate, yet many plants produce pleasant aromas. Multi-season interest can be achieved in a variety of different ways. For example, most evergreens prefer bright sunshine and good drainage. If you are looking for winter interest in an area with damp soil and



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filtered light, a red-twigged dogwood would perform much better. There are tons of options for spring bloom or fall color or whatever result you are trying to achieve. About the only quality you can't replace is sentimental value. However, when all else fails, consider the option I'll describe in the next paragraph.

Some plants can be very difficult to replace. Shrub roses are the most popular plant to covet. Their long season of bloom is hard to beat. Sweet scents and handsome hues add to their appeal. As if that weren't enough, many of these delightful plants also provide rose hips for the birds. Unfortunately, roses require more sun than many people have. Luckily, even the most heavily shaded yards have patches of sunlight. Consider planting roses in containers. Pots allow you to utilize areas that would not normally be conducive to planting.

Once you know where and what you will be planting, you are ready to begin the installation process. Testing the soil before planting is an excellent idea. Sample envelopes and instructions may be obtained from your local extension office. The University of Minnesota's soil testing laboratory will run a panel of tests for a menial charge that will tell you exactly what is going on with your dirt. Realistically, I doubt that many people take the time to collect and submit samples. I haven't gotten around to it yet! For those of us who choose to bypass this step, there is an alternative. All soils can benefit from the addition of organic matter. Sandy substrates become more cohesive. Clay soils loosen up a bit. Incorporate four to six inches of well-rotted organic matter into the ground before planting. In addition to improving the texture of the soil, organic material is full of beneficial micro-organisms that silently contribute to the welfare of your plants.

Remove any and all debris from in and around your garden bed. Late fall clean-up is best, but early spring works too. Pests and diseases often spend their winters inside of their withered hosts. Many will also hibernate in the soil, which is a solid argument for fall sanitation. Removing as many weeds as possible from the surrounding area is also advisable. This is especially important when growing fruits and vegetables. Various weeds are alternate hosts for mosaic viruses and other diseases. Practice good garden hygiene at all times for best results.

Once your area is neat and tidy and ready to go, spacing is the next project to tackle. Use your favorite book or website to determine the mature size of every plant you will be working with. Calculate in some personal space for each plant. I like to give each plant an extra six inches on all sides. This six inch cushion allows air to flow freely around each plant. Good air circulation helps keep foliage dry and fungus free. For a closer knit look, like a hedge or cottage planting, be sure to choose disease resistant species and varieties. Garden phlox and bee balm are well-liked by powdery mildew. New varieties are being bred all the time with improved resistance. However, under the wrong circumstances, these varieties will succumb to problems as well. Give all susceptible species some breathing room.



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Now you should be ready to go. Most plants should be planted at the same depth they are at in their containers. However, balled and burlapped trees should be planted an inch or two above the soil line to account for settling. I tell people to expose the portion of the ball that curves back towards the trunk. When trees and shrubs are planted too deep, roots sprout from the buried portion of trunk. These naughty roots have a tendency to strangle their parents.

Once you have your plants in their permanent homes, they will need to be watered. Irrigation should be through and infrequent. Saturate the entire root zone around each plant. Wait until the top two inches of soil dry out before watering again. Roots grow as they search for absorbable moisture between doses. Always water plants at their bases. There is no advantage at all to misting and spraying. Water droplets on the leaves are little welcome mats for fungus. In addition, these shimmering pools reflect the sunlight like magnifying glasses. Just as human skin burns easily in the water, so do plant tissues. Scorched, spotted leaves are probably not the image you had in mind. Water during the early morning hours if possible. More water evaporates than permeates during the heat of the day. Watering in the evening can create the cool, damp conditions that fungi love.

Fertilize with caution. Too much of a good thing can be deadly. Always use half of the labeled dosage. Remember, the fertilizer folks are trying to sell more fertilizer than you may need. Make sure the soil is adequately moist before you begin. Plants burn easily when the ground is dry. Trees and shrubs seldom need supplemental nutrients. They obtain lots of goodies from the soil they occupy. Lawn fertilizers infiltrate and grass clippings decompose, feeding the surrounding landscape. Test your soil if trees appear discolored or stunted. Wait at least a year to feed new plantings. Tender, new roots are vulnerable to burning. Slow-release fertilizers are generally preferred. Get them down early so they can work and wear off before fall. Rapid release foods can cause a surge or succulent growth that is irresistible to bacteria and insects.

Now that you know what to do to prevent problems, I'll talk a little bit about problem solving. Listen up C.S.I. fans, this is right up your alley! To treat any problem, you must first arrive at an accurate diagnosis. Begin by collecting information. Know exactly what kind of plant you are dealing with. Most diseases are species specific. Be sure that the plant material in question is zone hardy. Non-hardy plants may exhibit signs of stress that mimic disease.

Take a close look at all visible portions of the victim. Notice how the damage is dispersed. If the symptoms appear in a clear pattern, you may be dealing with herbicide drift or construction damage. Diseases usually attack without any rhyme or reason. Check out all portions of the infirm. Notice whether the damage is isolated to one portion of the plant. In some cases, only the leaves will be affected. In other situations, more than one part of the plant will exhibit symptoms. Always look at the roots if possible. Perennials and annuals can be completely exhumed without causing much damage.



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Smaller sections of larger, established plants may be examined by gently digging the dirt away from a small area. Root-related trauma can be very misleading. What might look like wilt above ground could mean rot underground. Mushy or knobby roots are a dead give away to subterranean culprits. Seeing the whole picture can reveal the point of origin. Knowing where the problem started and how quickly it progressed are important clues.

Look for spots, pimples and discolorations on the leaves. Pay attention to the shape, color and size of any abnormal markings you notice. Target like, circular blemishes are often indicative of viral problems; while angular spots are generally associated with bacterial infections. Being able to accurately describe the damage you see to a nursery professional can lead to a speedy diagnosis. Check out the stems and branches. Look for sunken or swollen areas. Notice the size and shape of these abnormalities. Consider whether a physical injury, such as hail damage, provided a point of entry. Pests will take the path of least resistance. Document all of your findings. Place samples of all affected appendages in ziploc bags. Bring them to a plant clinic or reputable nursery for further assistance.

Bugs could be bugging your babies as well. Insects will either chew, suck or bore into your plants. Holes in the leaves indicate chewing. Speckles indicate sucking. Weird looking bumps may indicate boring. Look for evidence of bugs on all exposed portions of the plant. Also examine the area around the victim plant. Remember, you may not ever see the perp in person. Check for eggs on the undersides of leaves. Use a hand lens if you have one. Keep your eyes peeled for empty pupas and shed skins. Look for feces and other insect secretions. Honeydew is a sticky substance that aphids leave behind after sucking all the juice out of your plants. While you may not notice the honeydew right away, you will notice the black mold that grows on it. What may look like three different problems could all be caused by the same culprit.

Most insects are considered either complete or simple. A complete insect goes through four different life stages: egg, larva, pupa and adult. Larvae often eat completely different diets than adults do. Simple insects only go through three changes. Nymphs and adults look, feed and behave much the same. An entire metamorphoses for either type of bug can occur more or less than once per year. Why on earth does all of this matter? Knowing how and when your perp does its dirty deeds is essential to ending its reign of terror.

After you learn when and where to expect uninvited guests, you can welcome them with repellents, traps or barriers. After a couple of weeks, tiny terrors may become garden Samaritans. Caterpillars chew, but butterflies pollinate. Always remember that pesticides kill tons of beneficial insects. Good guys eat the bad guys. When they get caught in the crossfire, it upsets the natural system of checks and balances. Pesticide use is very specific. Using the right chemical on the right pest at the right time is vital to success. Often, by the time you notice the problem, the guilty party is long gone. Mark your calendars and be on the lookout next season.



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