

8 Steps to a Toxic-Free Lawn

1. **Develop healthy soil.** Dig a 10" deep smooth narrow hole to examine the soil. The lawn should have between 5"-6" of topsoil; the darkest soil layer. If needed, add organic matter such as composted manures.
2. **Plant well-adapted, pest-resistant grass varieties.** Learn which grasses are most suitable to your climate from your local cooperative extension agent or garden center. A mix of two or more appropriate grass varieties is preferable. Overseeding, or providing additional seeding, of established lawns may reduce weed problems.
3. **Aerate the lawn twice a year.** Soil compaction is one of the largest causes of weed problems. Aerating, or removing small cores or "plugs" of soil, allows air, water, and nutrients to reach the roots of the grass.
4. **De-thatch.** Thatch is a dense layer of grass stems and roots on the surface of the soil. When thatch layers become ½" or more, the roots will grow up within the thatch instead of down into the soil, making grass susceptible to insects, disease, and weather stress. Thatch is reduced by aeration, organic matter topdressing, or by vertical mowing or power raking.
5. **Maintain proper pH.** Test your soil and adjust the pH accordingly. Low pH means high acid content – add lime to raise the pH. High pH means high alkaline – add sulphur to lower the pH. Watch for hints of pH imbalance such as a dandelion infestation. Dandelions prefer soil with a pH of 7.5, while grass prefers a pH of 6.7 to 7.0.
6. **Fertilize.** Use a slow release fertilizer formulation once a year, usually in the fall, to increase the efficiency of nutrient uptake and reduce nutrient runoff and leaching. Avoid conventional synthetic nitrogen-rich fertilizers that feed only the plant not the soil. The best way to determine your lawn's nutrient needs is by a soil test. As a general rule, use a natural, organic fertilizer with a balanced ratio of numbers close in proximity, such as 5-3-4. Learn to read signals. For example, if clover is taking over the lawn the soil is lacking nitrogen since clover gets nitrogen from the air and grass gets nitrogen from the soil.
7. **Water properly.** Over or under watering can induce pest outbreaks. Enough water should be applied each time to wet the soil to the depth of the grass root zone. The soil should be allowed to become nearly dry between

waterings. Avoid frequent, short waterings, which promote shallow root systems and reduce stress resistance. Natural, organic fertilizers can increase the water-holding capacity of the soil.

8. **Mow correctly.** Mow with sharp blades set to 3" to minimize adverse effects and retain the lawn's competitive ability. Never cut off more than 1/3 of the grass blades in a single mowing. Rotate the mowing pattern to reduce lawn compaction. Leave a light layer of grass clippings on the grass, which can provide up to half the lawn's nitrogen requirement.

Control

Any control strategy will depend on the type of problem. Infestations indicate the lawn is in stress. Treating the problem without understanding the root of its cause is not a long-term remedy.

- **Weeds.** Suppress weeds with mulches and frequent mowing. Hand-pull visible weeds. If you feel an herbicide is necessary, corn gluten is an excellent pre-emergent. A fatty-acid soap product called Sharpshooter™ is an effective broad-spectrum herbicide. Home remedies and natural products using vinegar, citric acid, or essential oils can also control weeds, as can special heat machines.
- **Insects.** Seek a home remedy before using a least toxic natural insecticide that may kill more than the target pest. Grubs can be controlled by applying the bacterium *Bacillus popilliae* (milky spore disease), which, once established, will provide control for decades. Kill chinch bugs by drenching the thatch layer with an insecticidal soap or neem spray. For sod webworms, dethatch and apply nematode parasites, insecticidal soap or *Bacillus thuringiensis* (Bt) when larvae are present.
- **Disease.** Diseases are often the result of improper nutrient or moisture conditions. For example, dollar spot, a common lawn fungus, thrives on lawns with insufficient levels of nitrogen. Prevent lawn disease with locally adapted, resistant varieties of grass and follow the eight steps above.

For more detailed information, visit www.beyondpesticides.org/lawn or call 202-543-5450.

