

Lawn Renovation IV: Soil Aeration

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Many gardeners are familiar with many steps in keeping turfgrass healthy and thriving. These include having a soil test done every three years to identify the soil's pH and the level of nutrients needed; planting grass seed in the fall; and applying lime periodically and fertilizing in the fall. Some gardeners may perform dethatching as needed to remove the dense mat of dead stems and debris that inhibit good seed-to-soil contact during fall seeding.

This article focuses on the important role aeration has to provide good soil in which to grow turfgrass. In Northern Virginia, many of us have clay soils that compact easily from walking and playing on our lawns particularly in wet weather. Compacted soil inhibits root growth because the soil particles are too small for roots to penetrate and do not hold oxygen and water essential to sustaining roots.

How do you check for compaction? Take a screwdriver and insert it into the lawn soil in multiple locations. If you cannot push the screwdriver down 3 to 6 inches (7 to 15 cm), your soil is likely compacted.



photo: University of Illinois Extension



photo: Utah State University

Core aerator

Rental centers offer two types of aerators. A core aerator has hollow metal tubes that removes plugs of soil; this is what you want. A machine (or footwear) with solid tines or spikes just pokes holes in the ground and might cause compacted soil according to academic soil scientists.

Core aeration in the root zone creates the spaces needed for oxygen and water to penetrate and stimulate new root growth. Gardeners can core aerate cool season turfgrass either in the spring (April) or in the fall. Aeration timing is important in the fall. Grass roots (and new seeds) need at least four weeks of growth after aeration before the temperature turns too

cold. Since aeration provides a "niche" to protect seeds and allows good seed-soil contact, many gardeners choose to core aerate at the same time as the annual application of 1/4 inch (6 mm) of fine compost and turf seed. Some gardeners give their new seed a boost by applying seed starter fertilizer [1:2:1, N:P:K] at the same time. NOTE: When planting new seed, do not use a fertilizer with weed control, which will kill the newly germinating grass.

Whether you seed or not, two or so days prior to core aeration, mow the turfgrass lower than summer levels and water the soil so it has a moderate (not wet) level of soil moisture. Core aerators "bounce" less in moist soil. Aeration is achieved using a machine with rotating metal tubes that pulls soil cores out of the ground. Several passes are needed to achieve the 20 to 40 holes per square foot, usually using a different pattern: horizontal followed by vertical.

Soil scientists strongly recommend core aeration every one to two years on turf with high traffic and every three to four years for most other lawns. They also recommend leaving the plugs on the ground to decompose.

When aerating, take care to control the heavy core aeration machine on slopes, near buildings, landscape beds, trees, underground utilities, and irrigation sprinkler heads. Be sure to mark these areas prior to aeration. One should take care not to damage tree roots when core aerating.

One last thought. Now that the soil is less compacted and has more pore space for oxygen and water, the gardener may observe abundant turfgrass growth. Keeping cool season turfgrass 3 to 4+ inches (7 to 10 cm) tall can make a big difference in how turfgrass survives summer heat and drought. Taller grass retains moisture in the soil, retards many weeds and provides soil with a 'sunscreen.' Remember that experts suggest only removing 1/3 of the blade when mowing to avoid shocking the turfgrass. Always mow with a sharp mower blade to avoid the jagged tearing of grass blades. Torn blades invite bacterial and fungal diseases to enter.



photo: Oregon State University

Aeration plugs from soil

References

- [Aerating Your Lawn](#), Virginia Cooperative Extension
- [Aerating Lawns](#), Clemson Cooperative Extension Factsheet
- [A Lawn To Dye For: How To Create a Perfect Lawn: Aerating Your Lawn](#), Virginia Cooperative Extension