

Why Aerate?

Soil compaction is a problem for both lawns and sports fields. Almost every turf grass area experiences some degree of soil compaction. In lawns, compaction can develop gradually over the years from regular mowing activity, and can develop more rapidly when lawns are in heavy use, such as when serving as a heavily used play area for children.

In sports fields, compaction is more easily recognized. For example, when a football team practices every day on the same field, and the marching band uses that same field between practices, turf quickly wears away. Soccer fields get heavy play around the goals. Even baseball and softball fields that host many games suffer from compacted soil, leading to worn, weakened grass plants and bare spots.

For sports turf especially, physical injuries have been tied to poor turf conditions. It's believed that up to 20% of all sports injuries are turf-related. The softer the playing surface, the more cushioning effect for athletes. For this reason, many believe that lush, dense turf is the best athletic playing surface.

All plant roots breathe. Simply put, compacted soil smothers turf roots. Compaction is a physical process which slowly reduces the amount of oxygen contained in a soil. The mineral particles, moisture, and organic materials in a soil do not compact. The only part of the soil which compacts is the air space between soil particles. As the air space is reduced, the percentage of water in the soil is increased and drainage is impeded.

Oxygen from the atmosphere moves into the soil through very small pore spaces to plant roots. As soil absorbs the force of traffic, soil particles (especially in the top inch or two) are compacted into a layer so that less oxygen enters the soil and less carbon dioxide escapes. The net result is a gradually thinning turf, until the soil can no longer support turf growth. Only weeds grow well in compacted, oxygen-deficient soils. Since compaction is a physical process, a physical remedy—aeration—is recommended.

In addition to adding much needed oxygen to the soil, and improving the health of grass plants, regular aeration also:

- Reduces thatch buildup (thatch is dead plant material lying on the soil surface at the base of grass plants, which can attract unwanted insects and fungus)
- Improves water infiltration
- Improves irrigation efficiency
- Improves fertilizer efficiency
- Helps reduce the need for chemical pesticides

Core aeration—removing two- to four-inch cores from turf—is generally considered the most effective form of aeration. Other aeration techniques which affect soil deeper than four inches may be required for treatment of severe compaction problems, depending on the soil conditions.

To identify soil compaction problems, make a visual inspection. Most compaction problems are obvious. Worn or bare turf, and/or weak turf plants, are sure signs. Standing water, and areas that are especially soft after rain may also be signs of compacted soil. Isolated dry spots can also indicate compaction.

Take a soil profile sample. If you don't have a soil sampler, a thin soil slice made with two cuts of a spade will do. Look for hard soil, high clay content, low water infiltration rate, black layer, poor rooting and waterlogging.

Regular aeration, best done during spring and fall, will help restore poor lawns and sports turf. For heavily used turf, more frequent aeration—once every four to six weeks throughout the growing season—is ideal.

The above piece was excerpted from an aeration booklet, which is available from Millcreek Manufacturing Company free of charge. The company may be contacted at tel. (800) 311-1323 or www.millcreekmfg.com.