



ALMSTEAD
® TREE, SHRUB & LAWN CARE

AIR SPADING



The Air Spade™ is an essential tool used in tree care and organic care.

It is a pneumatic device that utilizes compressed air to safely and efficiently break up difficult soil. It works much more quickly than conventional digging, and it eliminates the danger of damaging tree roots or utility lines.

Accessing root systems with an Air Spade is done for a number of reasons. An arborist may want to check for root rot beneath the surface, break up compacted soil that has been preventing nutrient and water flow to the roots, assess and correct girdling (circling) roots, or perform a root collar excavation or **RCX** (a treatment to remove soil around the root collar), as well as inspect buttress roots.

For a long time, the problem of defective root systems was a great source of aggravation to arborists, because accessing them was so laborious. The cost of physically digging to expose buried roots was high for tree-care companies and clients alike — and that was just for a diagnosis. But thanks to the Air Spade, we are now able to access root systems much more easily.

Vertical Mulching



Hub and Spoke



Sheet Excavation



Root Collar Excavation



Tree Trunk Turf Area Excavated

There are four patterns of soil aeration that we typically perform with an Air Spade: Root Collar Excavations (RCX), Hub and Spoke, Vertical Mulching, and Sheet Excavations.

SOIL DECOMPACTION WITH AN AIR SPADE

When the root zone of a tree lives in compacted soil, the rest of the tree is negatively affected. Without the proper flow of nutrients and water moving through the root system, trees become stressed. In turn, that stress opens trees up to insect



and disease problems that they would otherwise be able to fight off. Compaction can be the result of a construction project or simply everyday vehicle or foot traffic over the roots. Also, some soil types (like clay-heavy soils) are more prone to compaction than others. When nutrient deficiency is great enough, it can damage a tree on its own. The Air Spade is very effective in breaking up soil compaction.

TREATING GIRDLING ROOTS WITH AN AIR SPADE

Plants that are planted too deep or have excess soil or mulch covering the root flares often develop **girdling roots** that can result in decline, root rot and even tree death. Another common cause of girdling root formation is everyday vehicle or foot traffic over the roots. Girdling roots grow around the main stem of the tree and cut off or restrict the movement of water, plant nutrients and stored food reserves. Some soil types (like clay-heavy soils) are more prone to compaction than others. When nutrient deficiency is great enough, it can damage a tree on its own. A **root collar excavation** (RCX) performed with an Air Spade is the best way to address the problem. RCX is the process of removing excess soil from the top of trunk flares and around the trunks of trees using an Air Spade to blow excess soil from around the root collar and then evaluate the structure of the root system. Root decay is difficult to see and diagnose without uncovering and inspecting the buttress roots of the tree with an Air Spade.

VERTICAL MULCHING WITH AN AIR SPADE

Vertical Mulching is the process of air-boring holes in a grid pattern beneath the canopy of a tree. These holes are filled with a combination of soil amendments and other specialty materials which allows oxygen, nutrients and water to penetrate to the roots. Vertical mulching can be very beneficial to a tree's root system and is used quite often to strengthen stressed or declining trees.

WAKING UP SOIL BIOLOGY

Organic matter and air are two soil properties we can manipulate with an Air Spade. Compacted soil prevents the flow of oxygen and nutrients. Most of a tree's roots proliferate near the surface where they have the best access to oxygen and nutrients. Loosening the soil with an AirSpade, known as **Air Tilling** or Sheet Excavation is an excellent way to promote root growth. Increasing organic matter in the soil also improves the soil biology. We also usually mix in several inches of well-decomposed organic matter after Air Tilling.



Aerating the soil in a hub and spoke pattern with an Air Spade allows us to focus on rejuvenating the main roots of a tree.



Performing a Root Collar Excavation using an Air Spade can reveal girdling roots. If they are left uncorrected, these circling roots can damage the stability of a tree's root system and restrict the flow of nutrients to the trunk.



Air Tilling with an Air Spade promotes root growth and organic matter in the soil.

INTERESTED IN A CAREER AT ALMSTEAD?

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