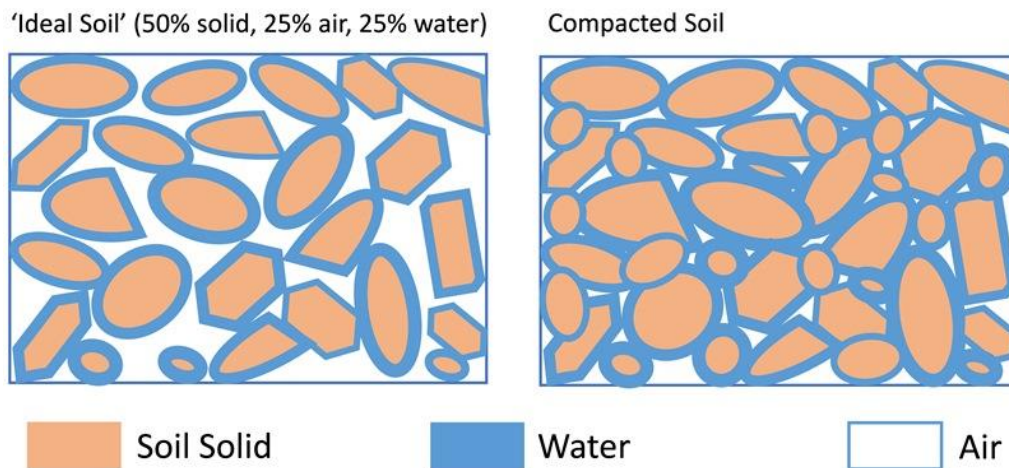


## Soil Compaction

Soil compaction is the [number one stressor](#) of urban trees. Amongst other things, a tree's roots serve to absorb oxygen, water, and nutrients from the soil. The majority of all fine absorptive roots are located in the upper 3-12" of soil because these materials are most abundant there.

An ideal soil is composed of 50% mineral solids (sand, silt, and/or clay) and 50% open pore space (filled with air and/or water). When compacted, this ratio shifts from the ideal, which in turn limits the ability of the tree's roots to obtain these vital materials.



**Soil compaction may not directly and/or quickly kill the tree.** More often, to make up for the lack of nutrient uptake, the tree begins to divert resources from defense to growth. This leaves it vulnerable to secondary stresses such as disease and insects. It is this secondary attack that usually kills the tree – sometimes months or even years later.

Trying to predict exactly how long a specific specimen can compensate for soil compaction is difficult as a number of factors come into play – area of root zone compacted, depth of compaction, elapsed time compacted, health when compacted, species, age, size, prevailing weather conditions, and so forth.

Sometimes, compensation can occur for a relatively long time (years) before above-ground signs of decline manifest themselves. Other times, the decline can occur much, much sooner (months).

Mechanical decompaction (rototilling, digging, etc.) is **not** recommended to correct this condition due to the high risk of tool-associated root trauma. On the other hand, a supersonic air jet ([air spade](#)) can be used to safely alleviate soil compaction within the critical root zone. This [process](#) restores pore space to promote root health and tree vitality. The benefits of soil decompaction are **directly proportional** to the amount of root area remediated.