Keep the Base of the Tree Trunk Dry

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The response to continuous contact with moisture is quite different for tree trunks and tree roots. Buttress roots of trees in a woodland environment are usually exposed and visibly distinct. In urban situations trunks sometimes appear to emerge from the soil as cylinders, a strong indication of deep planting or perhaps some other aspect of management such as settling of root balls in poorly tamped planting-hole bottoms. Widespread prevalence of mounded piles of mulch around tree trunks prompted this report on situations where trunk-base wetness exists.

Deep Planting

A study in Madison, Wisconsin provided a great deal of information and insight on problems of deep planting. Sugar maple was commonly the replacement tree following losses of American elm to Dutch elm disease in the 1960's and 1970's. A study showed that more than two thirds of young urban sugar maples in Madison showed decline. There were debilitation symptoms in the crowns but also obvious was deterioration of bark and wood in the root-collar zone. Two kinds of fungi, collar rot (*Phytopthora citricola*) and basal canker (*Fusarium* sp.), were found to be associated with this decline. Collar rot appeared to be the most destructive. Buried buttress roots and emergent cylindrical trunk bases were common. Some upper-level buttress roots were found to be buried 6 to 10 inches. The appearance of the crowns of declining trees correlated well with the degree of damage produced by collar rot and basal canker, both strongly associated with deep planting and almost continuously wet bark.

"Volcano" Mulching

The placement of mounds or cones of mulch around trees may also keep trunk bases nearly continuously moist, a condition that may be conducive to collar rot, basal canker or other fungi. Though properly applied mulch may nurture and regulate favorable conditions that somewhat resemble the forest floor, excessively deep mulch may be detrimental to near-surface roots, creating low oxygen levels and excessive moisture at the soil-mulch interface. Avoidance of mulch touching the tree trunk is embodied in the procedure producing what is sometimes known as a mulch "donut". The use of tub-ground mulch, ground into fine fragments, produces faster decomposition and a faster blending of organic material with soil, creating a favorable environment for earthworms which increase superficial soil porosity, a boon to development of fine roots. In forest situations, earthworms are known to accelerated decomposition of organic matter, releasing nutrients too rapidly. In urban situations, additional mulch facilitates a continuing breakdown process. It is likely that prolonged bark wetness may also be produced by vegetation closely surrounding the trunk, such as *Hosta* and small plants of buckthorn and honeysuckle.

Construction Site Changes

Grade changes with soil fill are usually associated with suffocation of near-surface roots, but such fill may also surround the trunk, enclosing basal bark with continuously moist fill material.

It is important to protect from any modification, a long existing soil-air interface within the "drip-line" of a tree, and desirably, even a larger area.

***Armillaria* Root Rot**

Armillaria is the most common root-rotting fungus in northern hardwood forests. It is also common in urban landscapes, orchards, and gardens. Damage is difficult to estimate because *Armillaria* often follows other malefactors and is often associated with other root-infecting fungi and with secondary insect infestations. Thus, “volcano” mulching and deep planting may introduce precursors responsible for stress that lessens resistance to *Armillaria*. Therefore, keeping the trunk base dry may indirectly reduce activity of *Armillaria*. Indeed, in regions with hot summers, in some instances, diseased trees appear to have been saved by removal of soil around the root collar and root buttresses.