Root Dysfunction

The Problem

With several notable exceptions, for the past 20 years almost all of our local nursery stock has had the root flare and some of the trunk buried in the root "ball". When these trees are planted with the top of the root "ball" level with the soil surface (as is recommended by many nurseries and books) the flare still remains below grade. The problem is *not* that the root "balls" are being planted too deeply in the hole, rather the root flare is *already* too deep in the "ball" before the hole is even dug. These trees cannot function properly. If your tree does not possess a pronounced flare above the soil, and instead looks like a utility pole where it enters the soil, it is dysfunctional or soon will be.

When the flare is buried it no longer functions properly. A buried flare promotes *and* conceals trunk rot and girdling roots.

Trunk Rot

Trunk tissue transitions into root tissue at the root flare. Trunk tissue can only function properly when it is able to stay dry. The bark on a trunk below grade stays wet and rots.

Girdling Roots

Roots normally "hug" the soils surface. If they are planted too deeply, they will "seek" the surface. The existing roots that survive "J"-hook up to the soil surface. Some of these roots then radiate out away from the trunk like spokes on a wheel somewhat normally, others grow back inward, meeting, or even twisting around the trunk.

New roots also grow adventitiously from buried trunk tissue. Many of these adventitious roots fail to radiate out from the trunk like spokes, and instead, also encircle or "girdle" the trunk.

Raised Tree Rings and Mulch "Volcanoes"

These problems also apply when soil and/or mulch (which eventually degrades into soil) is added over a flare *after* planting - even years after - especially if it is added over an *already* buried flare.

The Bottom Line

A trunk or root flare cannot function normally unless it is above ground. A below grade trunk can rot. When "disoriented" by this improper depth, both old *and* new roots form a tangled mess of rot and dysfunction. As trunks enlarge in circumference, they swell against these girdling roots which do not retreat. On the contrary, they *also* get larger in circumference. The vascular system is just below the bark. This is soon blocked by pressure from strangulation. Instead of the trunk expanding to a flare where it enters the soil, the trunk is compressed or pinched, often to half its circumference. Symptoms do not usually manifest themselves for five or more years after improper planting (or adding soil). The early symptoms are stunted growth and early fall color. If the top of your red maple turns red in July it probably has girdling roots. Subsequent symptoms are any number of secondary insects or diseases that exploit the dying tree and incorrectly get the blame for its decline.

Somewhat Species Dependent

All trees suffer some of these symptoms when their trunk and flare is buried. Some species are very prone to these problems even if their flares are at the *correct* depth. Red and Freeman maples are two common examples. *It is almost always fatal in red maples.* It is often fatal in Freeman's as they are a hybrid that is half

Red (and half Silver). Crimson King maples have red foliage but are not red maples. They are commonly called "red" mistakenly. They are Norway maples and are very likely to have girdling roots but are somewhat less likely to be fatal. Red maples have red parts, but their leaves are not red (until Fall). Common names can be confusing.

When Should it be Fixed?

These problems should be corrected at planting time. This correction will often stunt the plant for a short time - not correcting them will stunt it for life, then probably kill it.

Once they have been planted improperly, they can still be re-planted at the proper depth for a few years since the tree will fail to "grip" the soil properly with its dysfunctional root system. However, after a few years if the surviving roots have successfully "J"-hooked up to the surface, the tree will be permanently "locked" at the incorrect depth. At this time correction is *very* difficult and, I suspect, often temporary.

Can it Always be Fixed?

Some harm is always done with the good in root excavation/corrections. There is a point of diminishing returns. Correction *might* kill your tree. Not correcting them usually *will* kill your tree. Again, this is species dependent. We have performed thousands of root excavation/corrections - most of them red or Freeman maples. We saved every one... except 4. In these 4 trees we knew that the correction would do more harm than good due to the large size of the girdling root(s) in relation to the trunks. The trunks had been compromised by at least half due to long-term strangulation. We communicated this to our clients before correction was attempted. No-one was surprised when they died. We were simply called in too late.

In all other cases the trees vigor was eventually restored and they still stand as beautiful, living resumés today. I suspect some of these trees, however, will become girdled again if soil and/or mulch is allowed to fill the necessary depression left after correction. Appropriate follow-up should be scheduled.

Now That You Know...

Demand that nursery personnel show you the root flare before purchasing trees. In a small tree it may not be obvious, but it *must* be above the soil! Reject any plant that does not have an above grade flare. If your newly planted tree does not have an above grade flare, dig it up, expose the flare (if it still exists), remove any encircling roots and re-plant it at the right depth. Even if half the dysfunctional root system is removed you will likely do more good than harm. If a nursery/landscape contractor planted it, make them fix their problem. If your older tree has no flare, call your local ISA Certified Arborist or us for a referral. Root excavations are very difficult, time-consuming and expensive. They might also only be temporary. I suspect they may only *delay* death for twenty years or so. Only time will tell.

Again, planting depth corrections are far better dealt with at planting - **better early than late, but better late than *too* late.**

MW-0501B

board member
2-term past president

#03613

Since 4/14/18

Above and left: functional root flare. Trunk expands to a flare above soil. Roots radiate out perpendicularly like spokes above grade. When trees are planted at the proper depth, they are less likely to develop girdling roots and it is much easier to see and correct them early if they do develop. If these "ugly" surface roots are buried with soil or mulch the same harm is done as if the tree was planted too deeply in the first place.

Left: excavation has exposed a large girdling root. Removal of this root will be easy. Because of its small size in relation to the trunk, its removal should not be fatal, but the improper depth may still be problematic.

Below: Excavation and correction have been done. Is it too late? Probably. The stem is pinched where it needs to be flared. Notice the surviving roots have “J” hooked up to the surface.

563-949-2521

Scottcarlsonarborist.com

Rarely the cheapest. Always the best value