



SICK TREE DIAGNOSIS

SOIL: Is the foundation of all life: Healthy soils produce Healthy plants that sustain Healthy animals!

ROOTS: Must penetrate the soil (Check for compaction and other problems when soil testing) which must have **balanced available plant nutrients to sustain healthy growth.**

SOIL TEST TOP & SUBSOILS for available nutrients, salts, and tilth (for water & root penetration).

TPSL's standard soil test is the only lab that routinely supplies this information on all samples. Sample the Top Soil 0 – 12" as well as the subsoil in 1' increments down thru 4' or to bed rock. Make representative composite samples at each level from four sides of the tree at the drip line (do not composite "mix" different depths of samples). If there are large visual or physical differences, keep each core in separate bags, send with explanations, **let the lab do the mixing of different sides if and when needed.**

PLANTED TREES: With a spade or hand trowel, trench outward from the edge of root ball and with a water or air hose expose the root development to be sure they were planted correctly at the right depth and **the roots are** extending outward and down from the developing root ball, often the roots grow inward and must be adjusted for normal growth. Observe for obstructions, walk ways or drive ways and pavements in the root zone which should extend outward from the trunk up to 1 or 2 times the height of the tree.

Then check the root flares as below:

NATURALLY OCCURRING & OLDER PLANTED TREES: Uncover (gently) the root collar and the root flares of the major roots, between 4 – 11 in number. The collar is usually a swelling at or near the ground-line at the base of the bark and where the **main roots begin to flare outward**, before entering the soil to a depth 8 -12 inches and then sending out feeder roots to find moisture and nutrients. These **main anchor roots must breathe** at the base of the tree's bark, **root flares**, to support healthy feeder roots. Smothered root flares are the # 2 cause of declining tree health. # 1 cause is trunk damage from weed-eaters, mowers and other implements. Crepe Myrtles will sprout suckers when root flares are covered!



Exposed Root Flares

EXPOSE ROOT FLARES as noted above by scraping with hand trowel, using air pressure or gently washing away soil, mulch or fill while avoiding damage to the tender roots. Do not fill or cover the **root area at the base of the tree**, especially with mulch or plants to a distance of 2-4 feet from tree trunks.

FEEDER ROOTS support growth with young fine root hairs that compete with sod and other vegetation from the surface down thru the aerated soil $\pm 6"$. This major feeding zone is concentrated from the drip line back towards the trunk about halfway and then that same distance outward from the drip line. **This is the area that needs to be fertilized and covered with mulch especially young trees.**

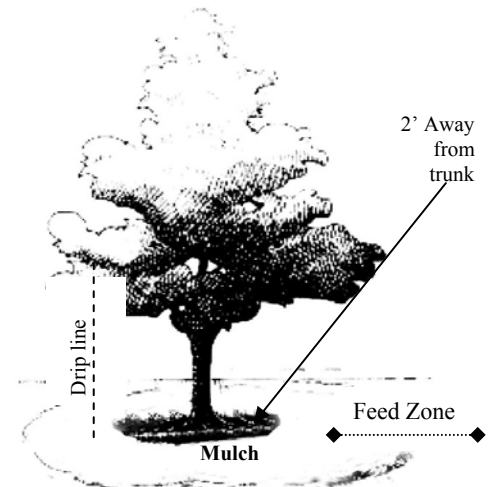
DISEASE AND INSECTS usually attack stressed and weakened trees (Nature's Law – Survival of the Fittest). They should be identified for short term control while restoring the health of the trees as **above and below.**

FOLLOW SOIL TEST RECOMMENDATIONS, balance nutrients, especially lime if Calcium is needed and should include humus, energy and biological products. With Salt problems soils requires internal drainage.

AFTER THE SOIL INOCULANTS are applied.

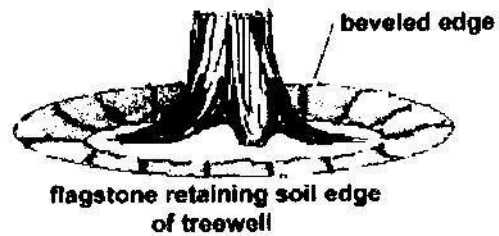
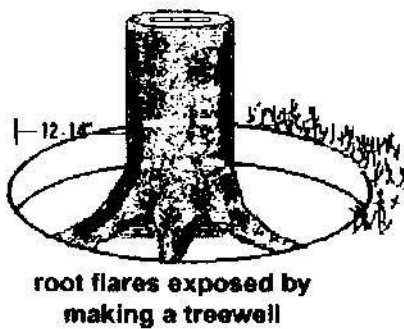
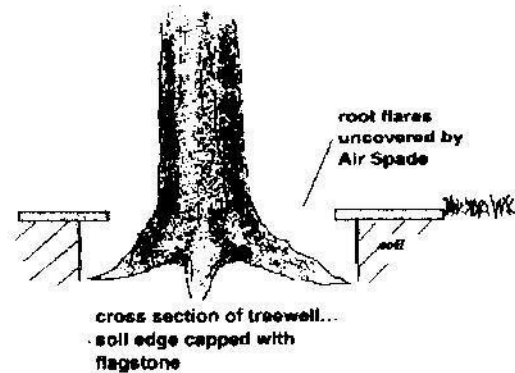
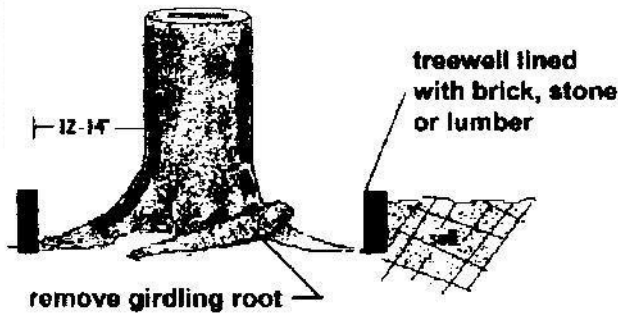
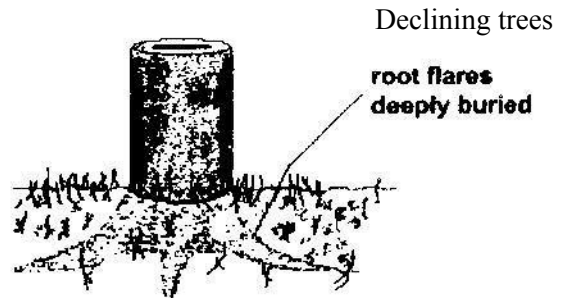
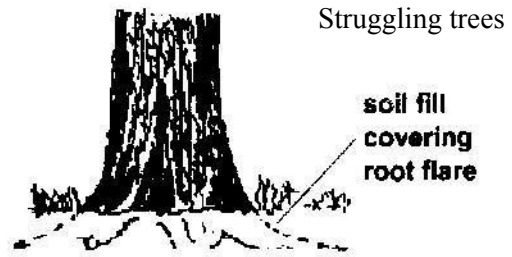
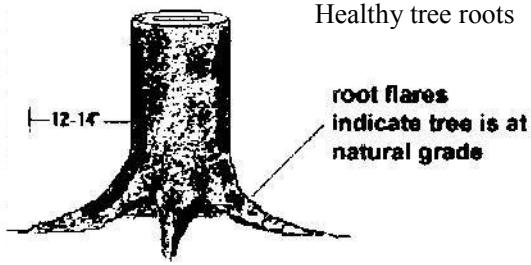
Spread a 2-4" layer of a good livestock based compost around the plants drip line, starting from 2 ft away from the trunk and out beyond the drip line to about the same distances as 1/2 the way back toward the trunk.

With a water jet on the end of a yard water hose---water jet small holes 2-4' deep at random many times in the composted area this moves the nutrients from the compost into the root zone to feed the beneficial microbes in the soil and the F-68 type (live-active) Soil Inoculants, to where they can fight the Pathogens which feed on the roots.



References: Howard Garret (flare expert) <DirtDoctor.com>, Malcolm Beck GardenVille <malcolmbeck.com> & G. Sandy Ross, ASCA <GSRTREE@aol.com>, University of Missouri< conservation.state.mo.us>, Air Spade <air-spade.com>

Instructions on Uncovering Root Flares



1. do not scrape or scar roots
2. do NOT use a shovel
3. use Air Spade, hand trowel or garden hose