IMPACTED TREES

Girdling or circling roots

Tree planted too deeply; and drainage is poor. Photo credit: William Fountain, University of Kentucky, Bugwood.org

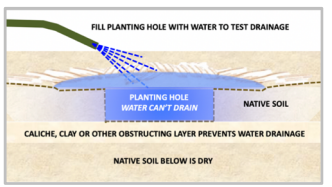
Scots pine planted too deep. Bark in contact with soil rotted and tree failed. Photo credit: Joseph LaForest, University of Georgia, Bugwood.org

Staking wire constricting nutrient flow in phloem under bark. Tree could snap off at constriction. Photo credit: Andrew Koeser, International Society of Arboriculture, Bugwood.org

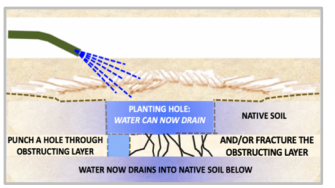
TREE PLANTING TECHNIQUES

Inspect roots before planting

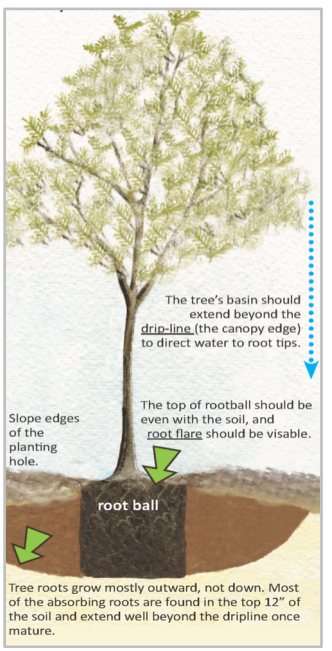
Loosen circling, matted roots



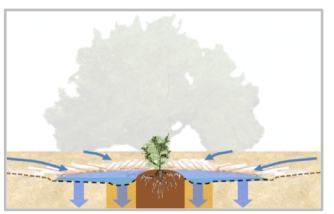
Check planting hole to see if it drains within several hours or if drainage is too slow



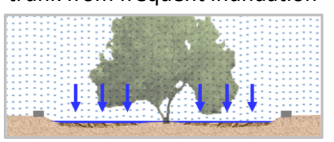
If drainage is slow, fracture or dig through impeding layer to improve drainage



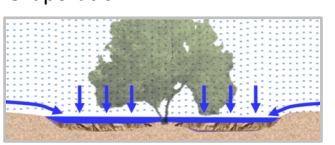
Planting diagram showing width and depth of planting hole and position of root crown relative to top of soil level. Source: http://tucsoncleanandbeautiful.org/wp-content/uploads/2019/06/tree-care-guide-how-to-plant.jpg.png



Place tree on slightly raised planting area if inside a water harvesting basin to protect trunk from frequent inundation



One inch of organic mulch in basin receiving direct rainfall allows rain to penetrate mulch to soil below, and helps reduce evaporation



Two inches of organic mulch in basin with rainfall + runoff further reduces evaporation. Runoff water can flow under thicker mulch to soil below

URBAN TREE THREAT

Tree planting issues

ISSUES

- Girdling roots can restrict water and nutrient flow, weakening trees
- Planting too deep can cause bark to deteriorate; possibly killing the tree
- Poor drainage in planting hole results in water logged soil
- Damage caused by staking wire can reduce water and nutrient flow

MANAGEMENT OF EXISTING TREE

- If tree is showing stress due to girdling roots, consult certified arborist to determine if girdling roots can be removed to save the tree
- To counteract deep planting, carefully remove excess mulch or soil from around the trunk to expose trunk flare and maintain soil at this level
- To improve existing drainage, create vertical drains around tree, fill with gravel to drain water below root zone
- Check staking to ensure tree is not being damaged. Remove staking when tree is stable on its own

PLANTING NEW TREES

- Set up water harvesting system prior to or during planting. Determine basin size, raise elevation of tree in the basin
- Make sure tree well/water harvesting basin drains well. Break or dig through any obstructing layers such as caliche or dense clay
- Plant trees carefully to correct depth (tendency is to plant too deep), following these guidelines:
  - Dig shallow, wide hole (2 - 3 times root ball width) as deep as the root ball
  - Break up any girdling or matted roots on the root ball
  - Only mineral soil, no organic amendments in back fill
  - Set root ball on undisturbed soil to prevent sinking
  - Stake only if necessary; remove stakes 2 to 3 years after planting
  - Do no unnecessary pruning
  - Plant when temperatures favor plant establishment
- Use organic mulch to reduce evaporation and weed growth, insulate soil surface, recycle nutrients and promote root and trunk growth. Keep mulch 3 to 6 inches away from tree trunk

REFERENCE AND RESOURCE WEBSITES - MANAGEMENT OF EXISTING TREE

- https://tfsweb.tamu.edu/uploadedFiles/TFS_Main/Urban_and_Community_Forestry/About_Urban_and_Community_Forestry/Urban_Forest_Information_Sheets/Technical%20Tree%20Solutions%20-%20Correcting%20girdling%20roots.pdf
- https://extension.umd.edu/resource/trees-planted-too-deeply
- https://landscape-water-conservation.extension.org/practices-to-improve-drainage/
- https://cals.arizona.edu/yavapai/anr/hort/byg/archive/treefailures2020.html

REFERENCE AND RESOURCE WEBSITES - PLANTING NEW TREES

- https://www.isa-arbor.com/store/product/104/

https://cals.arizona.edu/yavapai/anr/hort/mastergardener/mgcourseresources/az1022.pdf

- http://tucsoncleanandbeautiful.org/wp-content/uploads/2019/06/tree-care-guide-where-to-plant.jpg.png
- https://extension.arizona.edu/sites/extension.arizona.edu/files/attachment/SelectingPlantingStaking-2.pdf
- https://www.ose.state.nm.us/WUC/PDF/TreeBrochure.pdf
- https://treenm.org/education/tree-tips/
- https://www.isa-arbor.com/store/product/104/