

Asphyxiation

Asphyxiation is related to the air and water conditions of the soil. The trouble appears mainly in fine-textured (clay) or shallow soils with impervious subsoils. When such soils are over-irrigated or wetted by prolonged rainy periods, the water displaces the soil oxygen. When small fibrous roots are deprived of oxygen, they die. The impaired root system is unable to supply the necessary water to replace that transpired by the leaves, so a water shortage develops causing the tree to collapse. No fungus is associated with this condition.

Symptoms

Leaves suddenly collapse and turn brown. Usually, the entire tree is affected; however, only a branch or limb may collapse. The fruit withers and usually drops. The branches usually die back from the tips. The symptoms develop so rapidly it may be regarded as a form of collapse. Usually the larger branches remain alive and, after a time, vigorous new shoots develop on the main branches and the tree recovers. Examination of the fibrous root systems show they are dead.

Damage

Depending on severity, loss of leaves, fruit or entire tree.

Treatment

Trees under three years of age usually die and will have to be replanted.

Trees over three years of age usually force new shoots along main branches and trunk in which case, after vigorous growth has been established (3 to 5 months), prune dead branches to live growth and allow tree to recover. Tree should be treated the same as frost- or fire-damaged trees. If leaf drop is excessive, the tree should be whitewashed. Fruit, if mature, should be harvested as quickly as possible to prevent loss.

Control

Asphyxiation is perhaps best controlled by prevention. Give serious consideration to depth of soil and impervious hard layers when planting avocados. Shallow soils should be avoided.

Where soil conditions preclude the hazard, consider alternate panel irrigation.

Provide for prompt run-off of rain water by opening basins to allow drainage and keep furrows open.

Good drainage and aeration can be provided if an impervious layer can be identified, and is shallow enough to break through to permit good drainage below by ripping along side the tree, or drilling four 4- to 6-inch post holes at each corner of the tree and back-filling with coarse gravel. It is important the ripper blade and/or auger get below the impervious layer for this technique to be effective.