

# Are You Guilty of Over-Mulching?

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Over-mulching is a waste of time and money and is quickly becoming the number one cause of death of many common bushes and trees.

There are many reasons why over-mulched trees with mulch piled high against the stem or trunk die:

## ***Excessive Moisture and Root Rot***

This is the number one cause of death by over-mulching. Repeated applications of mulch can cause a waterlogged soil and root zone, causing root suffocation. Roots must respire and take in oxygen, unlike leaves that give off oxygen. The problems that are caused from yearly over-mulching are not immediate. The symptoms may take 3-5 years to express themselves, and sometimes longer, depending on the species and soil type. When oxygen levels drop below 10 percent, root growth declines. Unfortunately, by the time you recognize the symptoms (off-color foliage, abnormally small leaves, poor growth, and die-back of older branches), it is generally too late to apply corrective measures. At this point, the plant has gone into an irreversible decline. When roots decline and die, so does the plant.

## ***Inner Bark Tissue Death***

Above-ground stem tissue of most trees, shrubs and perennials is morphologically different from roots and must be able to freely exchange oxygen and carbon dioxide. Mulch that is piled onto the trunks decreases gas exchange, with inner bark tissue eventually dying. When the inner bark dies, roots no longer receive the energy produced by the leaves through the process of photosynthesis, and the plant dies.

## ***Canker Diseases***

Another mortality factor that is associated with the application of mulch next to the stem tissue involves fungal and bacterial "canker" diseases. Most plant diseases require moisture to grow and reproduce. These lethal trunk diseases are no exception and usually gain entry into the stressed, decaying bark tissue. Once established, these cankers will eventually encircle the tree, killing the inner bark, starving the roots and ultimately killing the plant.

## ***Excessive Heat (Preventing "Hardening")***

Thick mulch layers that are placed against the stem will begin to decay and can produce excessive heat similar to composting, where inner mulch layers may reach 120-140 degrees Fahrenheit, the heat may directly kill young trees or shrubs or may prevent the natural autumn "hardening" process that plants must go through to prepare themselves for winter. If trunk flare tissue does not adequately harden before freezing weather arrives, the tissue will die, the roots will starve, and again, the plant will go into decline. The tree needs healthy roots to produce the hormones and chemical growth regulators that allow it to properly prepare for winter weather.

### ***Rodent Chewing & Stem Girdling***

Placing piles of mulch adjacent to tree trunks and other plants can kill plants by providing cover and habitat for chewing rodents such as mice, voles, etc. With lots of cover from predators, the critters will usually live under the warm mulch in the winter and chew on the tender, nutritious inner bark. Often you may not notice this chewing until the following spring or summer when the tree no longer looks good. If the chewing is extensive (more than 50 percent of the circumference) or goes around the whole tree (girdles it completely), there is little you can do to save the tree.

### ***Nutrient Deficiencies & Toxicities***

Continuously using the same type of mulch may cause plant death by changing the soil's acidity level, commonly referred to as soil pH. Acid mulches like pine bark may have a pH of 3.5 to 4.5 and when applied continuously, can cause the soil to become too acidic for most plants to grow. Conversely, hardwood bark mulch, although initially acidic, may cause the soil to become too basic or alkaline, causing acid-loving plants to quickly decline. Soil pH's above 6.5 usually create micronutrient deficiencies or iron and manganese for many common landscape plants. You can avoid this by periodically rotating the type of mulch used.

Finally, non-composted, "fresh" or non-aged mulches may cause nitrogen deficiencies in many young trees, shrubs and flowers. Decomposing bacteria and fungi that ultimately break down mulch must have an ample supply of nitrogen to do their job. Most landscaping mulches are comprised of bark or wood that has very little nitrogen available for the decomposing bacteria. Hence, the bacteria in the soil utilize the existing nitrogen to break down the mulch. This process may cause nitrogen deficiencies and yellow leaves as a result of the excessive mulch.

### ***In Conclusion***

Knowing what kind of plants you have, in addition to knowing your soil's drainage, is imperative. If you have shallow-rooted species growing on poorly-drained soils (clays), mulch depths generally should not exceed 2 inches. ON the other hand, if you have more deeply-rooted species growing in better-drained loam or sandy soils, your plants would benefit from 3-4 inches of mulch. With coarser-textured mulches (large nuggets) you can go a bit deeper due to the better oxygen diffusion through the mulch and into the soil. However, be more cautious with the finer, double-shredded mulches on the market. A 1-2 inch layer may be all you need to keep weeds down and prevent unnecessary soil drying in the summer. Also, a mixture of mulch particle sizes is recommended for a more continual process of mulch breakdown and nutrient release.

The best way to determine if you have a mulch problem in your landscape is simply to dig through the mulch layer to see how thick it really is. Sometimes you need only to lightly rake your existing mulch to give it that "finished" landscape appearance. As a rule-of-thumb, for the optimum health of the plant, keep the mulch a minimum of 3-5 inches away from the trunks of young trees and shrubs, and 8-12 inches away from mature tree trunks, and spread the mulch evenly to the outer branch tips of the tree or shrub.

If don properly, mulching is one of the best things that you can do to your landscape plants, but if done improperly, it can stress and predispose plants to premature and untimely death.