

**Linda Chalker-Scott, Ph.D., Extension Horticulturist and Associate Professor,
Puyallup Research and Extension Center, Washington State University**

The Myth of Pathogenic Wood Chips

“Uncomposted wood chips can spread pathogenic fungi and bacteria to healthy roots”

The Myth

Arborist wood chips are an increasingly popular choice for landscape mulching. Through research, wood chips have been shown to moderate soil temperature and maintain soil moisture conditions to optimize root growth and overall plant performance. Wood chips also provide a slow release of nutrients to the soil, assisting not only plants but beneficial microbes and detritivores as well. Wood chips are also instrumental in relieving soil compaction and improving soil health. Finally, many studies have demonstrated the effectiveness of wood chip mulches in suppressing weed growth.

Recently there has been increased concern that wood chips made from diseased wood may spread disease into healthy landscapes. This concern has led to the practice of allowing wood chips to compost for several weeks before use, theoretically killing pathogens. Those without the time or space to compost chips, however, may need to use green chips. Will green wood chips spread plant pathogens into an otherwise healthy landscape?

The Reality

Though concern over pathogen-contaminated wood chips is increasing, there is little in the published literature supporting this possibility. Although researchers at Colorado State University and the University of Wisconsin have found that *Cytospora*, *Thyronectria*, and *Verticillium* survive on uncomposted wood chips, they did not provide evidence that these pathogens would travel several inches through the mulch to healthy roots below. In fact, other research has demonstrated that wood chips made from infected maple trees and used as mulch failed to spread *Verticillium* to healthy trees.

One of the most pervasive root rots, *Armillaria* spp., will survive in the soil on root pieces of susceptible hosts. This would caution one to thoroughly remove diseased roots from the soil, which would be in much closer contact with healthy root systems than topdressings would be. It is a different story, however, if one is foolish enough to amend backfill soil with wood chips. A researcher working with *Rhododendron* spp. lost plant material to *Phytophthora* root rot after amending the soil with 33% composted wood chips. Not only is this a poor practice for installing woody plants, it also casts doubt on the efficacy of composting to remove pathogens from wood chips.

Finally, it's important to realize that many of these pathogens are both opportunistic and pervasive in the environment. *Armillaria*, for instance, is widespread in many soils where it functions as a decomposer but it can become pathogenic under unhealthy soil conditions. Healthy soil communities, on the other hand, have diverse fungal and bacterial species, many of which are symbiotic partners of plant root systems. These beneficial species can outcompete pathogens as long as soil conditions remain optimal for root growth. When soils become compacted and anaerobic, plants decline and become susceptible to opportunistic pathogenic microbes – always present but inactive in healthy soils.

Given the distance between wood chips used as mulch and plant roots, it's doubtful that pathogens would travel far under healthy soil conditions. It does, however, point out the importance of keeping wood chip mulches away from the trunks of trees and shrubs as moist trunk conditions are at risk of pathogen infection.

The Bottom Line

- Fungal species in decomposing wood chips are generally decomposers, not plant pathogens
- Healthy soil communities include mycorrhizal species needed for optimum root health
- Under healthy (aerobic) soil conditions, beneficial and harmless fungi probably outcompete pathogenic fungi
- Healthy plants are not susceptible to opportunistic fungal pathogens
- Do not amend soil with wood chips; use them only as a topdressing
- Keep mulch away from trunks of trees and shrubs to prevent opportunistic pathogen infection

For more information, please visit Dr. Chalker-Scott's web page at <http://www.theinformedgardener.com>.