

SOME GARDEN MYTHS AND WHAT RESEARCH HAS TO SAY

THE MYTH OF ABSOLUTE SCIENCE: *"If it's published, it must be true"*

When any of the following are 'part' of an article or book, it should be a red flag when evaluating the validity of a source

- 1) When no scientific rationale or hypothesis presented.
- 2) Authorities in unrelated fields are cited to give the appearance of legitimacy to the experiments
- 3) Various claims are footnoted and referenced, but they are not relevant to the subject or are not scientifically valid sources.
- 4) The author anthropomorphizes; in other words, the author use human comparisons to the subject in terms of having "likes and dislikes, their feelings and idiosyncrasies."
- 5) The author claims that "beyond a doubt the phenomenon itself has been proven." Science does not "prove" any hypotheses: it either disproves or supports a set of assumptions. This is why science is constantly changing, as old hypotheses are discarded or amended as we learn more about the natural world.
- 6) The number of replicates is small and not sufficient for statistical analysis. No statistically valid information is provided.
- 7) The experimental design is poor and does not maintain factors at consistent levels.
- 8) The book is published by a company that does not specialize in science.
- 9) The research itself was never published in a peer-reviewed journal, nor has any replication of the work appeared in this body of literature.

THE MYTH OF COLLAPSING ROOT BALLS: "BALLED AND BURLAPPED ROOT BALLS MUST BE LEFT INTACT DURING TRANSPLANTING."

The Bottom Line

- •Balled and burlapped plant materials usually contain soil significantly different than that of the transplant site.
- Differences in soil texture will impede both water movement and root establishment.
- Root defects can only be found and corrected if root ball soil is removed.
- Proper root preparation combined with best practices for installation will greatly improve tree establishment and survival in any landscape.

THE MYTH OF DRAINAGE MATERIALS FOR CONTAINERS: *"Add a layer of gravel or other coarse material in the bottom of containers to improve drainage"*

The Bottom Line:

- Planting containers must have drainage holes for root aeration.
- "Drainage material" added to containers will only hinder water movement.
- Use good topsoil throughout in perennial container plantings for optimal water conditions and soil structure.

THE MYTH OF CLEAN COMPOST: "Compost is a safe, chemical-free source of nutrients for gardens"

The US Composting Council has a Seal of Testing Assurance (STA) program. Members in this program must test their products for pathogens, heavy metals, and pesticides on a regular basis. More information can be found at this website: <http://tmecc.org/sta/index.html>.

The Bottom Line

- The best sources for pesticide-free compost are those that have been analyzed and certified. Home-made compost is also a good choice as long as you are sure your materials are contaminant-free.
- Unregulated compost can contain pesticides, heavy metals, and other environmental toxins that may be harmful to you and your plants.
- If you must have your lawn sprayed with persistent, broadleaf herbicides, be sure to use a mulching mower and leave the clippings in place. Do NOT compost them or bag them for clean green removal.
- Soil testing for heavy metals is crucial for any landscape where plants are grown for human consumption.

The Myth of Compost Tea: "Aerobically-brewed compost tea suppresses disease and is an effective alternative to traditional pesticides"

The Bottom Line

- Properly composted organic material makes a wonderful mulch.
- Non-aerated compost teas may be useful in suppressing some pathogens on some plants.
- Aerated compost teas have no scientifically documented effect as pathogen suppressors.
- Overuse and runoff of compost teas could conceivably contribute to water pollution.
- Aerated compost tea (ACT) use for disease control continues to lack scientific credentials.
- There is no documented science supporting the use of ACT on turf and landscape materials.
- ACT is not registered as a pesticide and cannot legally be recommended or applied as one.
- "It is very difficult to do a microbial pesticide risk assessment on a mixture of unidentified microorganisms that could easily contain human and nontarget organism pathogens.
- Aerated compost teas that have been "enhanced" with molasses, kelp, and other high-nutrient additives have been documented through scientific research to contain E. coli and Salmonella populations, both of which are human pathogens.
- There is a rapidly growing, compost tea industry that continues to downplay the lack of reputable science behind the product.

THE MYTH OF BENEFICIAL BONE MEAL:

"Add a handful of bone meal to planting holes before installing shrubs and trees"

The Bottom Line

- Bone meal supplies high levels of phosphorus and calcium, elements that are rarely limiting in non-agricultural soils.

- Phosphorus, from bone meal or other sources, does not “stimulate” plant growth; it is only a mineral, not a plant growth regulator.
- High levels of phosphorus, from bone meal or other sources, will inhibit growth of mycorrhizal fungi.
- Without mycorrhizal partners, plants must put additional resources into root growth at the expense of other tissues and functions.
- Before you add any supplementary nutrients to your landscape, have a complete soil test performed first.

THE MYTH OF ORGANIC MATTER: “Healthy soil has high organic content”

The Bottom Line

- Ideal soils, from a fertility standpoint, are generally defined as containing no more than 5% OM by weight or 10% by volume.
- Before you add organic amendments to your garden, have your soil tested to determine its OM content and nutrient levels.
- Be conservative with organic amendments; add only what is necessary to correct deficiencies and maintain OM at ideal levels.
- Do not incorporate organic amendments into landscapes destined for permanent installations; topdress with mulch instead.
- Abnormally high levels of nutrients can have negative effects on plant and soil health.
- Any nutrients not immediately utilized by microbes or plants contribute to non-point source pollution.

THE MYTH OF PATHOGENIC WOOD CHIPS:

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

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.

THE MYTH OF PRETTY MULCH:

“Bark mulch and sawdust are aesthetically preferable to wood chips and they work just as well”

The Bottom Line

- Bark mulch can be contaminated with salt or weed seeds.
- Bark naturally contains waxes that prevent absorption and release of water in landscapes.
- Sawdust is too fine a material to use as a landscape mulch and will prevent water and gas movement as it compacts.
- Softwood bark mulches are often not “gardener friendly” due to the presence of tiny, sharp fibers.
- Arborist wood chips can be finely chipped if this is more aesthetically desirable.

THE MYTH OF CEDAR WOOD MULCH:

"Wood chips made from cedars will kill landscape plants"

The Bottom Line

- It is unlikely that wood chip mulches containing cedar will have negative effects on established landscape plants.
- The allelopathic activities attributed to mulches made from cedar and other species may actually be due to other factors such as nutrient and light limitations.
- Seeds and seedlings, whether weeds or desirable species, are more sensitive to mulch suppression as they do not have established root systems.

THE MYTH OF PAPER-BASED SHEET MULCH:

"Newspaper and cardboard sheet mulches are excellent ways to reduce weeds and maintain soil health in permanent landscapes"

The Bottom Line

- Newspaper and cardboard sheet mulches can be effective for annual beds if they are properly maintained.
- Sheet mulches can prevent water movement and gas exchange if they are too wet or too dry.
- Use site-appropriate mulch materials. Permanent, ornamental landscapes, non-maintained sites, and restoration areas are not appropriate locations for newspaper and cardboard sheet mulches.

HERBICIDES:

It's not true that non-selective herbicides only kill herbaceous plants. Weed killers for broad-leaved plants, such as dandelions, can kill your broad-leaved ornamentals just as well. Keep in mind if applying such to lawns that tree roots often extend far out from the plants, and can take up such herbicides. Several beliefs about using pesticides are myths and not true.

REFERENCES:

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

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