

West-Coast Gardening in a Changing Climate

Don't fall into the pseudoscience trap! These practices are NOT science-based and will NOT help

- Amending the soil before planting
- Avoiding hot weather watering
- Companion planting
- Hügelkultur
- Lasagna mulching
- Native plant superiority
- Permaculture
- Using water crystals

Claim: Before planting trees and shrubs, work in organic material to improve soil

- Based on an agricultural model for intensive crop production
- Scientific summary
 - Hydrology disruption
 - Soil subsidence
 - Nutrient overload

Claim: Watering during the hottest part of the day will scorch leaves

- Water drops on the leaf surfaces act as tiny magnifying glasses
- Wet leaf surfaces are more likely to burn than dry ones

Fact: Other factors can cause scorch, but not water

- Symptoms of water deficit:
 - tip and marginal leaf scorch, early leaf abscission
 - shoot dieback and stunted growth
- Causes of water deficits – all linked to decreased leaf water:
 - Soil issues: lack of water, presence of salts, compaction, flooding
 - Weather issues: lack of rainfall, high temperature, high light, wind
 - Plant issues: poor root health (improperly prepared roots)

Claim: Companion plants “use tables to select compatible species”

- About plant associations
 - Three Sisters
 - Polyculture and intercropping
 - Phytoremediators
 - Nitrogen fixers
 - Nurse plants
- NOT: astrological charts for gardeners

Claim: Hügelkultur is an ancient way to grow vegetables sustainably

- About Hügelkultur
 - Invented by a German gardeners and published in a booklet in the 1960's
 - Promotes a method that doesn't occur in natural systems
 - Is inherently unstable and therefore not sustainable

Claim: Lasagna mulching creates a healthy, nutrient rich soil

- About lasagna mulching
 - “a no-till method of layering brown and green materials to increase organic matter”
 - Emotional appeal
- Scientific summary
 - Sheet mulches reduce water and air availability to roots
 - Overuse of any nutrient can create soil, plant and water problems

Claim: Native species are the best choices to reduce irrigation needs

Facts:

- Nativeness has nothing to do with irrigation needs
- Urban areas do not have natural environmental conditions
- Native species are often not adapted to urban conditions
- Introduced species provide ecological benefits
- Vegetation diversity, structure and function more important to biodiversity than nativeness

Claim: Permaculture is an ecology-based approach to gardening

Facts:

- 🌿 Permaculture is a philosophy-based approach to gardening
- 🌿 Includes scientific-sounding terms that are meaningless or incorrect (i.e., pseudoscience)
 - 🌿 Dynamic nutrient accumulators, narcissistic plant species
 - 🌿 Buffer plants, guilds
- 🌿 Practices are not science-based and are damaging to plant and soil health
 - 🌿 Sheet mulching
 - 🌿 Recommended use of noxious weeds and other invasive species

Claim: Water crystals protect plants in heat-stressed, drought-prone situations, by absorbing water, then releasing it gradually as plants need it

- 🌿 About hydrogels
 - 🌿 Acrylamide polymers
 - 🌿 Absorb large amounts of water
 - 🌿 Used in cosmetics, disposable diapers, tissue enhancement
- 🌿 However, water crystals
 - 🌿 ...are broken down quickly by microbes, sunlight and fertilizers, so...
 - 🌿 ...are only a temporary fix to droughty soil conditions
- 🌿 Scientific summary
 - 🌿 Variable effectiveness in field studies; no long-term benefit
 - 🌿 As crystals dry out, they absorb water from the soil
 - 🌿 Studies have found mulches to be more cost-effective

Science-based alternatives:

- 🌿 Avoid soil tillage and minimize any soil disturbance
- 🌿 If needed, add organic material as a top-dressing – do not incorporate
- 🌿 Do not overdo rich organic materials – add only what is sustainable
- 🌿 Manage water carefully
 - 🌿 Watch foliage for signs of wilt and water immediately
 - 🌿 Use residential rainbarrels if legal in your community
- 🌿 Use coarse woody mulches (not bark!) for optimizing soil moisture AND
 - 🌿 Control weeds
 - 🌿 Provide slow-release nutrients
 - 🌿 Protect and enhance soil health
 - 🌿 Support native populations of beneficial microbes

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URL: <http://www.theinformedgardener.com> (white papers on many of these myths)

Blog: <http://www.gardenprofessors.com>

Books: <http://www.sustainablelandscapesandgardens.com>

Facebook page: <http://www.facebook.com/TheGardenProfessors>

Facebook group: <https://www.facebook.com/groups/GardenProfessors/>

Publications: https://www.researchgate.net/profile/Linda_Chalker-Scott/publications