West-Coast Gardening in a Changing Climate

These practices are NOT science-based and will NOT help gardens and landscape support plants

- Amending the soil before planting
- Companion planting
- 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: 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: 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 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
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Facebook group: https://www.facebook.com/groups/GardenProfessors/
Publications: https://www.researchgate.net/profile/Linda_Chalker-Scott/publications
Washington State University Extension publications: http://gardening.wsu.edu/(peer-reviewed fact sheets on many topics of interest)