

Garden Zombies! Myths that will not die

Seminar roadmap

- 🍃 Evaluating information
- 🍃 Assessment examples: products, practices, and phenomena

Evaluating information using the CRAP test

- 🍃 Credibility of the source
 - 🍃 Author's credentials and qualifications?
 - 🍃 Publisher?
 - 🍃 Website urls?
 - 🍃 Relevance to managed landscapes
 - 🍃 Crop production or urban landscapes?
 - 🍃 Geographic or other constraints on usability?
 - 🍃 Accuracy
 - 🍃 Science-based?
 - 🍃 Objective?
 - 🍃 Current?
 - 🍃 Well-written?
 - 🍃 Purpose
 - 🍃 Educational or commercial?
 - 🍃 Political, ideological, cultural, religious, or personal biases?
 - 🍃 When in doubt, consult with relevant discipline experts
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Assessment of products and practices

- 🍃 No supporting science (no research; inconsistent or negative results; poor quality research)
- 🍃 Misapplied science (agricultural production practices applied to nonagricultural settings)
- 🍃 Overextrapolated science (products and practices with limited efficacy outdoors, and perceived phenomena with no landscape-level evidence)

1. No consistent, reliable supporting science

- | | |
|-------------------------------------|----------------------------|
| 🍃 Products | 🍃 Practices |
| 🍃 Balanced fertilizers | 🍃 Biodynamics |
| 🍃 Compost tea | 🍃 Companion planting |
| 🍃 Conditioners | 🍃 Fertilizer injections |
| 🍃 Kelp products | 🍃 Hot weather watering |
| 🍃 Organic superiority | 🍃 Hügelkultur |
| 🍃 Vitamin B-1 transplant fertilizer | 🍃 Lasagna mulching |
| 🍃 Wound dressings | 🍃 Leaving rootballs intact |
| | 🍃 Native plant superiority |

Because these are not supported with sufficient evidence, they should not be recommended.

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

2. Misapplied science

Products

- Epsom salts
- Gypsum
- Hydrogels
- Phosphate fertilizer

Practices

- Amending soil before planting
- Foliar fertilizers

Claim: Epsom salts are a “safe, natural way to increase plant growth”

About Epsom salts

- Magnesium sulfate
- Makes water feel silkier

Scientific summary

- Generally used to treat magnesium deficiency in production agriculture
- Adding magnesium to soils with adequate magnesium can cause nutritional imbalances

3. Overextrapolated science

Products

- Corn gluten meal (CGM)
- Harpin
- Mycorrhizal/probiotic inoculants

Phenomena

- Allelopathy and black walnuts
- Humus formation

Claim: Don't plant under black walnut trees - the juglone will kill other plants

Allelopathy - what is it?

- Correlative evidence
- Juglone

Evidence for allelopathy

- In the lab - petri dish experiments
- In the landscape

How conflating correlation to causation causes all kinds of embarrassing problems

When peer-review fails: good quality research but poor reporting

- Often due to researcher bias
- Selective highlighting of results in the abstract
- Downplaying or omitting other results

When peer-review fails: Poor quality research

- Common with authors with no expertise in field
- Conflating correlation with causation

Look at the body of research. If a paper is at odds with the majority of other papers, it must withstand increased scrutiny

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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