

Deconstructing soil advice - how to recognize "alternative facts"

Before you buy or apply

- 🌱 Credibility of the source - bona fide or self-proclaimed expert?
- 🌱 Relevance to home gardens and landscapes - avoid agricultural production advice
- 🌱 Accuracy of information - scientifically based and current
- 🌱 Purpose of sharing information - educational or sales pitch?

Avoid these soil "improvement" products and practices*

- | | |
|---|-------------------------------------|
| 🌱 Amending soil (working stuff into the soil) | 🌱 Lasagna mulching |
| 🌱 Compost tea | 🌱 Mycorrhizal inoculants |
| 🌱 Conditioners | 🌱 Peat moss |
| 🌱 Epsom salts | 🌱 Phosphate fertilizer* |
| 🌱 Fertilizer injections | 🌱 Probiotic inoculants |
| 🌱 Gypsum | 🌱 Vitamin B-1 transplant fertilizer |
| 🌱 Kelp products | 🌱 Water crystals (hydrogels) |

*unless a soil test shows a deficiency

Claim: phosphate fertilizer enhances root growth of new transplants

- 🌱 **Fact:** Most residential soils have excessively high phosphorus
- 🌱 **Scientific summary**
 - 🌱 Phosphorus competes with iron and manganese uptake
 - 🌱 Excess phosphorus inhibits mycorrhizal fungi, so roots work overtime
 - 🌱 Excess phosphorus pollutes aquatic systems

Claim: mycorrhizal inoculants improve root growth and plant establishment

- 🌱 **Fact:** While mycorrhizae do these things, adding packaged spores
- 🌱 **Scientific summary**
 - 🌱 Healthy soils have their own populations of mycorrhizae
 - 🌱 If you want to inoculate a new planting, use a handful of soil from beneath your own established landscape plantings
 - 🌱 Unhealthy soils won't support mycorrhizae

Action items for gardeners:

- 🌱 Have a baseline soil test before adding **anything**, including fertilizer or rich organic material
 - 🌱 It's easier to deal with nutrient deficiencies than nutrient toxicities
 - 🌱 Ask for help in deciphering results

Grower		Sampler		Field No.		Field Name		Crop Year		Crop		Yield Goal															
General Gardening																											
Depth (ft.)	Available Inches	NOS-N lbs/acre	NH4-N lbs/acre	Sulfur ppm	pH	Soluble Salts (mmhos/cm)	Organic Matter Percent	P(bio) ppm	K(bio) ppm	P(ace) ppm	K(ace) ppm	Calcium (meq. per 100 grams)	Magnesium (meq. per 100 grams)	Sodium (meq. per 100 grams)	Eff.	Boron ppm	Zinc ppm	Manganese ppm	Iron ppm	Copper ppm	CEC (meq. per 100 grams)	% Base Sat.	Chloride lbs. per. acre	Bray 1 P ppm	Total Bases (meq. per 100 grams)	Sample D	
1		33	50	5	7.6	0.24	2.76	62.0	229																		
Total	0.00	33	50																								
Estimated Nitrogen Release from Organic Matter 100 lb/acre							Estimated Total Nitrogen Available to Crop 183 lb/acre							Last Year's Crop		Fertilizer 5-10-10											
<p>Comments</p> <p>The pH is in a desirable range. The soluble salt level is below the toxic range. The sulfur level is low. The nitrogen and organic matter levels are in a medium range. The potassium level is high. The phosphorus level is extremely high.</p> <p>The above fertility levels should be adequate for General Gardening.</p>																											

- If you have low soil OM, topdress with organic material as “slow food” rather than “fast food” fertilizer after planting
 - Use your own compost, or purchase certified compost to avoid problems like weed seed, heavy metals, or pesticides
 - Use thin layers to avoid excessive nutrient load
- Apply coarse woody mulches rather than fine, rich organic mulches (like compost)
 - Control weeds
 - Add nutrients slowly
 - Do not restrict water and gas movement
 - Protect and enhance soil health
 - Support native populations of beneficial microbes
- Improve your BS detection skills!
 - Follow our blog and join our FB Garden Professors group (links below)
 - Scientific literacy manual - <http://cru.cahe.wsu.edu/CEPublications/EM100E/EM100E.pdf>

For more information

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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/>

Washington State University Extension publications: <http://gardening.wsu.edu/>

Fact sheets about products mentioned in this presentation:

Epsom salt - <http://cru.cahe.wsu.edu/CEPublications/FS308E/FS308E.pdf>

Gypsum - <http://cru.cahe.wsu.edu/CEPublications/FS307E/FS307E.pdf>

Mycorrhizae - <http://cru.cahe.wsu.edu/CEPublications/FS269E/FS269E.pdf>

Wood chip mulches - <http://cru.cahe.wsu.edu/CEPublications/FS160E/FS160E.pdf>