




## The Science Behind Home Garden Remedies

March 27, 2014  
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## Home Garden Remedies

- Everybody has a magic cure for what ails plants
- What is the science behind the claims?




## SOIL AMENDMENTS AND FERTILIZERS


## Coffee Grounds: Will It Give Your Plants A Jolt?

- Practice: Sprinkle fresh coffee grounds on your soil
- Claim
  - Fertilizer
  - Lower soil pH
  - Suppresses weeds




## Science Behind Coffee Grounds

- Fertilizer analysis
  - 2% nitrogen
  - Nitrogen not available
- Doesn't change soil pH
- May suppress weeds
  - Allelopathic chemicals
  - Tomato, geranium, others negatively affected



## Recommendation

- Don't use as a mulch
- Use it as part of your compost—up to 20%



### Are Eggs Eggstraordinary?

- Practice: Incorporating eggshells into your soil
- Claim: will prevent blossom end rot in tomatoes by adding calcium to the soil



### Science Behind Eggs

- Blossom end rot is caused by low calcium in the fruit
- Using egg shells or fertilizer with calcium doesn't work
- We have plenty of calcium in our soils



Ohio State University Extension  
http://ohioline.osu.edu/hyg\_hact/3000/3117.html

### Mitigating Blossom End Rot

- Don't disturb your tomato roots
- Maintain even moisture
- Mulching
- Don't over-fertilize



### CONTROLLING INSECTS

### Buying Insect Predators: Calling in the Insect Mafia

- Claim: lady bugs will control aphids and mealy bugs in your garden
- Reality:
  - Great for greenhouses
  - Not so effective in your garden
    - If not enough insects in your garden, may move on to greener pastures
    - Not harmful



### Dish Soap as Insecticide “Takes Cuticles Out of Your Way”

- Claim: dish soap can control aphids and scale
- Mix 1 to 4 T dish soap per gallon water
- Theory: dish soap harms soft-bodied insects by washing off the waxy cuticle



### Insecticidal Soap

- Reality: it works!
  - Washes off the waxy cuticle
  - Aphids and scale dehydrate
- Downside: washes off the waxy cuticle of plants; too harsh



### Recommendation

- Use commercial insecticidal soap for some soft-bodied pests
  - Less likely to harm plant
  - May be a little less effective in controlling aphids than homemade concoctions



### Tobacco: Does Smoking Kill?

- Lots of other garden gurus claim chewing tobacco is an effective insecticide
- Practice: steep chewing tobacco in water
- Reality:
  - Hard to control the amount of nicotine in your concoction
  - Nicotine—overstimulates insects—causes nerve cells to be on fire



### Problem with Tobacco



Tobacco mosaic virus on orchid

Department of Plant Pathology Archive, North Carolina State University, Raleigh, NC. See more at: [http://www.forestryimages.org/browse/detail.cfm?imgnum=152547&lib=ash\\_A&A=DOI&of](http://www.forestryimages.org/browse/detail.cfm?imgnum=152547&lib=ash_A&A=DOI&of)

### Tobacco Mosaic Virus

- First virus to be discovered
- Fatal disease
- Affects geraniums, tomatoes, potatoes, peppers, cucumbers
- Over 125 species, 9 plant families



Be smart, don't start!


### Beer to Control Slugs: Does It Get Any Better Than This?

- The claim: beer attracts slugs; drown
- Practice: Dig a hole; insert saucer/bowl into ground with rim even with soil surface; fill with beer leaving an inch below the rim



### Beer to Control Slugs


- Reality: beer does attract some slug species within a few feet; must have the right shape of bowl
- Better:
  - Cultural: reduce humidity; clean up areas
  - Diatomaceous earth; reduced effectiveness when wet
- Best:
  - Iron phosphate—less toxic than metaldehyde
    - Sluggo, Escar-Go!



Creative Commons: Andrew E. Loran  
<http://www.flickr.com/photos/aworan/1355433051/size/orig/>

### Hot Peppers: Will Your Insects Give up the Ghost?



- Claim: spreading ground up hot peppers on plants will control insects
- Practice: few tablespoons of Tabasco added to gallon of water + 1T of dish soap



<http://www.originafjam.com/pain-is-good>

### Hot Peppers

- Reality:
  - Deters insect damage on leaves/plants sprayed
  - Effective against white flies and mites
  - Doesn't damage plants
  - Remember acts as a repellent—not an insecticide
  - Have to reapply often
  - Commercial capsaicin sprays last longer

### FIGHTING PLANT DISEASE

### Compost Tea: Is It *Your* Plant's Cup of Tea?



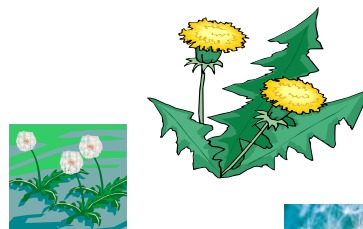
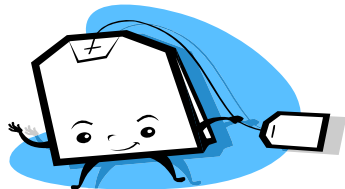
- What is it?
  - Compost soaked in water
  - Add sugar
  - With/without aeration
  - Filtered
- How is it applied?
  - Foliar treatment
- Claims:
  - Beneficial microbes
  - Disease suppression

### Science behind Compost Tea

- Some microbes in the tea
  - Dependent upon the quality of your compost tea
  - Aerated compost tea may harbor *E. coli*
- Little to no support for disease suppression
  - Somewhat effective for controlling bacterial pathogens in a petri dish
  - Not so effective in a garden
  - As good as tap water at controlling powdery mildew

## Recommendation

- Jury is still out
- Don't use aerated compost tea on edible leaf crops because of *E. coli* concerns



## HERBICIDES



## Vinegar: Salad Dressing or Herbicide?

- Claim: acetic acid will kill weeds
- Practice: use white vinegar or apple cider vinegar; undiluted
- Table strength—usually 5%



## Vinegar as Herbicide

- Acts like a contact poison on smaller weeds
- Won't kill the roots so weeds will regrow
- Can knock back weed seedlings



## What about 20% acetic acid vinegar?

- 2002 USDA study
  - 5% not reliable control
  - 20% provided 80-100% control of annual weeds
  - WARNING: Note that vinegar with acetic acid concentrations greater than 5% may be hazardous and should be handled with appropriate precautions



## 20% Acetic Acid: This Is NOT Your Mother's Salad Dressing

- Has to be licensed as a pesticide!
- Is corrosive
- Over 10% can cause skin burns; permanent corneal injury
- Need to wear goggles or face shield
- Only vinegar registered in ND:
  - Grotek Elimaweed & Grass Killer—7.5%



### Is Corn Gluten A-Maizing As a Pre-Emergent Herbicide?

- Claim: corn gluten applied as a pre-emergent can deter weeds from germinating
- Practice: spread this by-product of corn processing on your lawn; 20 lbs. per 1000 sq. ft.



### Corn Gluten

- Reality:
  - Safe—found in cat food
  - Expensive
  - Will fertilize your lawn
  - Needs to be applied for several years before it works
- Recommendation:
  - Organic: corn gluten is a good option
  - Conventional: synthetic options more effective



### HOW TO EVALUATE GARDEN REMEDIES

### Do Your Homework

- What is the claim?
- Who is making the claim?
- Ask how it works?
- Does it affect the factors of plant growth?
- Investigate the claim using unbiased sources

### Other Resources

- NDSU Extension Lawns, Gardens & Trees Blog: <http://www.ag.ndsu.edu/horticulture>
- Jeff Gillman, The Truth About Garden Remedies
- Linda Chalker-Scott
  - [http://puyallup.wsu.edu/~linda%20chalker-scott/horticultural%20myths\\_files/](http://puyallup.wsu.edu/~linda%20chalker-scott/horticultural%20myths_files/)