

Organic fungus control



Organic fungus control



Natural Pest Control

- Organic gardeners have realistic expectations when it comes to insects and diseases. They don't try to eliminate them from their yard or garden. Instead they seek to keep them below damaging levels. One of the main methods for keeping pest populations below damaging levels is to encourage thriving populations of beneficial insects and pest predators, including spiders, bats, birds, lizards, and toads. The two most important things you can do in your yard to support these helpful species is to plant a wide variety of plants and flowers and avoid using synthetic pesticides, which are especially damaging to beneficial insects. Practicing good sanitation is another method of organic pest control. Removing disease infected leaves or plants, rotating crops so you are not growing the same type in the same spot year after year, and handpicking insect pests and eggs all help to suppress pest populations.

Beneficial insects



Beneficial insects





Beneficial insects



Beneficial insects

Green lacewings — known scientifically as the *Chrysoperla rufilabris* — are aggressive aphid predators that have an appetite for other soft-bodied pests as well.



Beneficial Insects

- **Four toothed Mason Wasp-**

The females hunt and paralyze caterpillars as the food source for their larvae.



Beneficial insects

- **Blue Wing Digger** wasps can contribute significantly to natural control of lawn grub (primarily Japanese Beetles) populations.





Beneficial insects

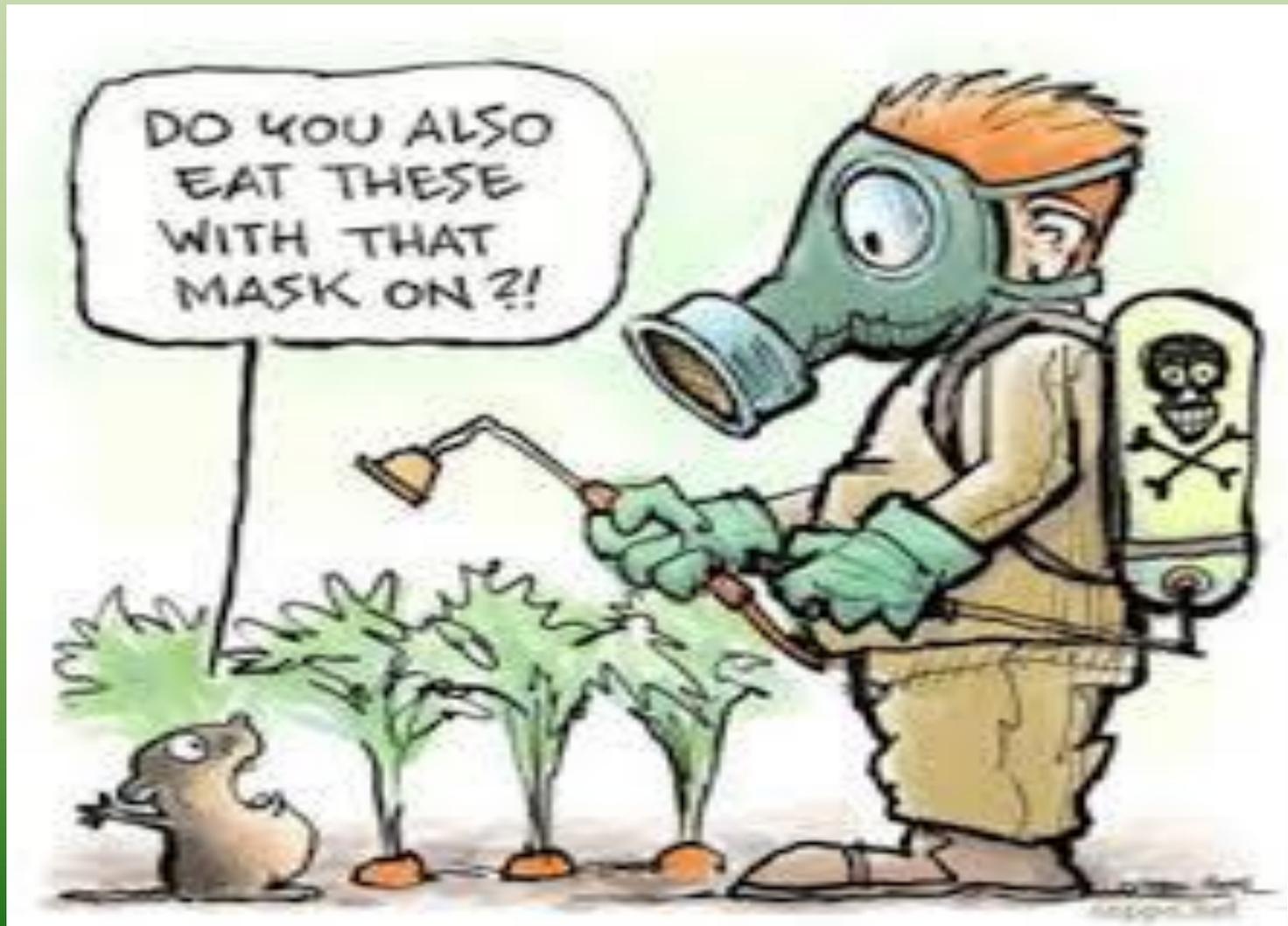
- **Thread waisted wasps**
As adults, they feed on nectar. The larva feeds on caterpillars, paralyzed and stocked in the cell by its mother. These are solitary wasps, so each female excavates her own burrow.



Celosia



Synthetic Pesticides



Your Guide to Pesticides in Produce

The Highest in Pesticides

These 12 popular fresh vegetables and fruits consistently contain the highest amounts of pesticides - buy these organic!

 Apple	 Peaches
 Bell Peppers	 Pears
 Celery	 Potatoes
 Cherries	 Red Raspberries
 Grapes (imported)	 Spinach
 Nectarines	 Strawberries

The Lowest in Pesticides

These 12 popular fresh vegetables and fruits consistently contain the lowest amounts of pesticides.

 Asparagus	 Kiwi
 Avocados	 Mangos
 Bananas	 Onions
 Broccoli	 Papaya
 Cauliflower	 Pineapples
 Corn (sweet)	 Peas (sweet)

Wallet guide design by OrganicFoodCorner.com

Information brought to you by the Environmental Working Group



Organic Pest Management: Example

- Conventional approach: spray insecticide to control caterpillars, which often results in a secondary outbreak of aphids or spider mites because beneficial insects such as lady beetles and other predators are also killed
- Organic approach: enhance habitat for beneficial insects to increase population, reduce stress on crop plant, use adapted varieties, and use non-chemical methods to control pests (Bt, hand-picking, row covers, alternating planting dates, traps, etc.)

Insecticidal Soap

- Generally considered to be the least toxic pesticides available.
- Used to control soft bodied pest such as aphids & mealybugs.
- Must have direct contact.



Insecticidal Soap

- Non toxic to beneficial insects such as parasitic wasps and ladybugs.
- No residual effect.
- Once the spray has dried, walking over the dried residue will not harm a moving insect.



Insecticidal Soap

- Some plants are sensitive to soaps.
- -Japanese maple.
- -Lantana
- -Bleeding heart.
- -Ferns
- -Palms
- If unsure about plant sensitivity, spray on a small test section.



Make your own Insecticidal soap

- Pure Soap: Use a pure soap, such as Castile, or all-natural soap. The active ingredient in insecticidal soap comes from the fatty acids in animal fat or vegetable oil, so it's important to use the real thing. Don't use detergents (which aren't actually soaps), dish soaps, or any products with degreasers, skin moisturizers, or synthetic chemicals.



Insecticidal soap

- 1 heavy tablespoon soap to 1 quart of water
- OR
- Cooking Oil: To help the solution stick a little longer, add two tablespoons of light cooking oil (such as corn, canola, olive, or safflower) per gallon of water to the mix. OR
- Vinegar: To make a spray that also targets powdery mildew, add a teaspoon of apple cider vinegar per gallon of water to the mix.

Insecticidal soap

- Bar Soap:, drop a bar of pure soap (such as organic castile bar soap or Ivory) into a gallon of water and leave it overnight. Remove the bar and shake well before spraying.



Horticultural Oil- Dormant Oil

- Refined petroleum products.
- Used to control pests such as scale, mites, etc.
- Interferes with the pests respiration & membrane function.
- To be effective, it must come into direct contact with pest or eggs.

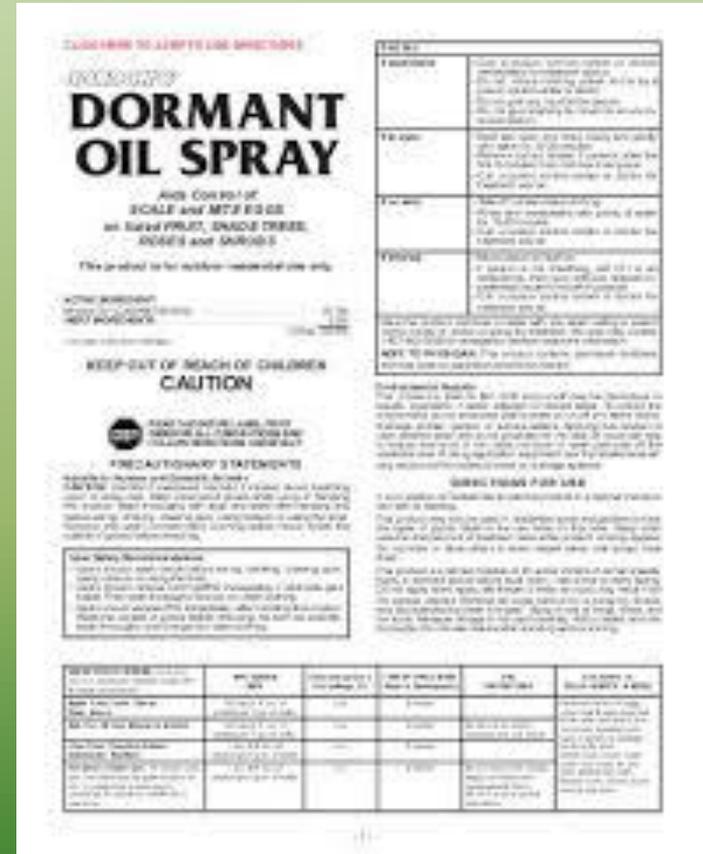


Horticultural oils

- Most available to home gardeners are petroleum-derived, but you can find plant-based oils, too. Manufacturers refine the oils to remove impurities damaging to plants, and then combine the oils with emulsifiers so the end product can be mixed with water and sprayed on plants.
- Look for types approved by the Organic Materials Review Institute (OMRI).

Horticultural Oil- Dormant Oil

- Do not use when temperature's are below 40° & above 100° Fahrenheit.
- Do not spray when humidity is above 90%, it may burn plants.
- May damage plants when buds are emerging.
- Consult label!!!



Make your own horticultural oil



Make your own horticultural oil

- Mix one tablespoon Canola Oil (regular veg. oil also), one teaspoon dish detergent, and one teaspoon rubbing alcohol in a spray bottle. Add a few drops of cinnamon oil. I then add warm water, shake and spray both sides of the leaves.

Organic Pest Insect Control

Neem Oil

- **Neem oil** comes from the tree *Azadirachta indica*, a South Asian and Indian plant common as an ornamental shade tree. It has many traditional uses outside of the insecticidal traits. For centuries, the seeds have been used in wax, oil and soap preparations. It is currently an ingredient in many organic cosmetic products too.



Neem oil

- As a pesticide, **Neem oil** kills insects at all stages of development — adult, larvae and egg. The active chemical in neem oil, azadirachtin, gets rid of insects in a few different ways:
- As an antifeedant
- As a hormone disruptor
- By smothering
- Azadirachtin will force the insect or pest to stop eating the leaves.



Neem oil

- **Neem oil** insecticide works as a systemic in many plants when applied as a soil drench. This means it is absorbed by the plant and distributed throughout the tissue. Once the product is in the plant's vascular system, insects intake it during feeding. The compound causes insects to reduce or cease feeding, can prevent larvae from maturing, reduces or interrupts mating behavior and, in some cases, the oil coats the breathing holes of insects and kills them.



Neem oil

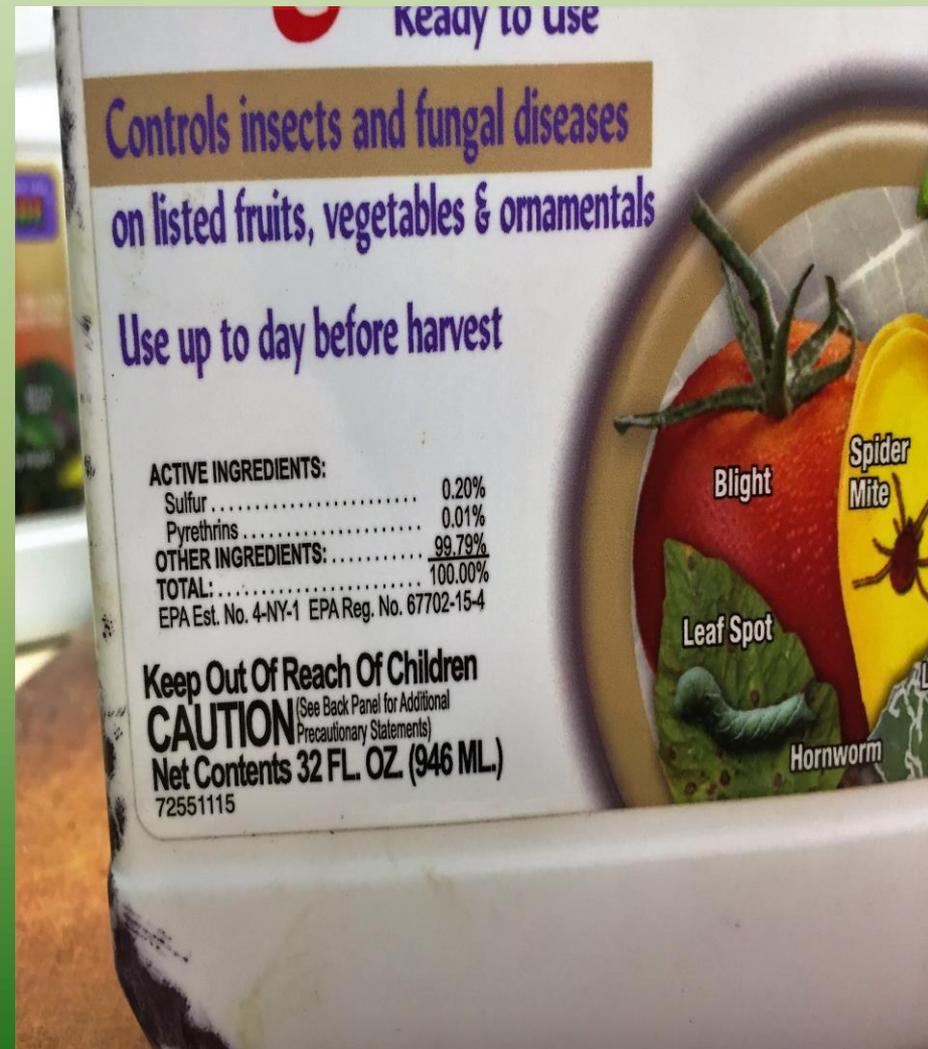
- **NEEM OIL IS A GREAT FUNGICIDE.**
- You can use neem oil to prevent or even kill fungus on your plants. Use neem oil for powdery mildew and other common fungal diseases, including:
 - Black spot
 - Scab
 - Rust
 - Leaf spot
 - Anthracnose
 - Tip blight
- To prevent fungi, spray susceptible plants every seven to 14 days until the fungus is no longer a threat.



Insect control

Pyrethrin

- **Pyrethrins** are a class of organic compounds normally derived from *Chrysanthemum* that have potent insecticidal activity by targeting the nervous systems of insects. Pyrethrin can be synthetically made by industrial methods (pyrethoids), but it also naturally occurs in chrysanthemum flowers, thus is often considered an organic insecticide.

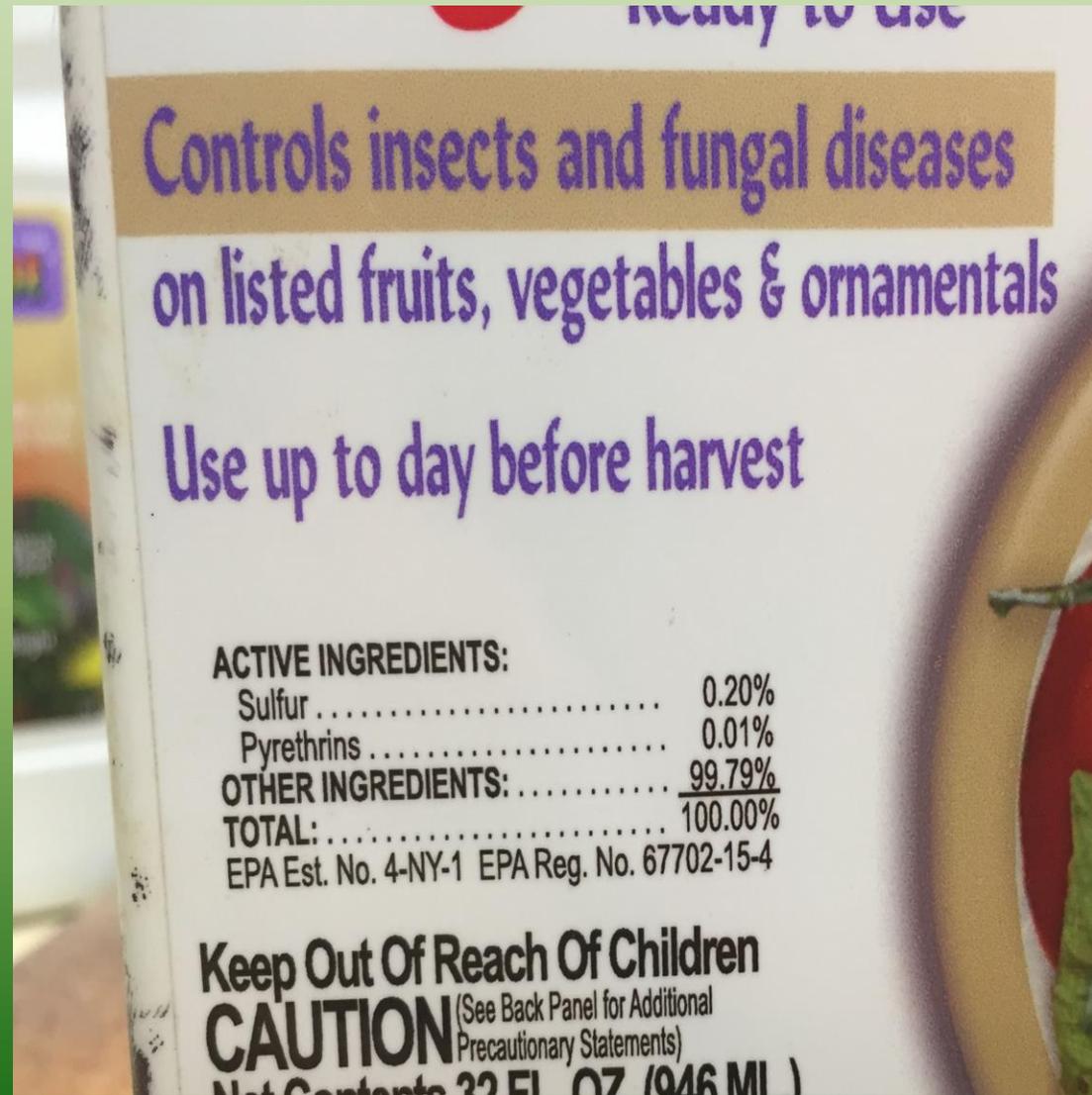


Pyrethrin Facts

- **Kills Beneficial Insects:** Pyrethrum is highly toxic to most insects. This means that it's effective against the pests, but it's also deadly to the beneficial insects that pollinate your vegetables and help out by eating those pests.
- **Best for Spot Spraying:** Like any powerful compound, pyrethrum should be used only for spot-spraying heavily infested plants. You shouldn't be dousing the entire garden with it.
- **Human and Animal Safety:** Pyrethrum is touted as being "non-toxic." Truth is, pyrethrum isn't harmless, but it is one of the least toxic pesticides out there. It's toxic to fish and amphibians, though, so it should be kept out of storm drains and waterways.
- **Pyrethrum Benefits:** Pyrethrins are biodegradable and break down quickly in sunlight (within a few days). They don't persist in the soil or on your veggies, which is one of the reasons they're considered relatively safe to use around food crops.
- **Growing Pyrethrum:** You can grow Pyrethrum daisies in your own garden to repel pests, and you can even harvest and dry the flowers to grind into your own insecticidal powder.

Sulfur & Pyrethrin

- **Sulfur Fungicide** prevents fungal spores from germinating, so it is most effective before the disease develops.



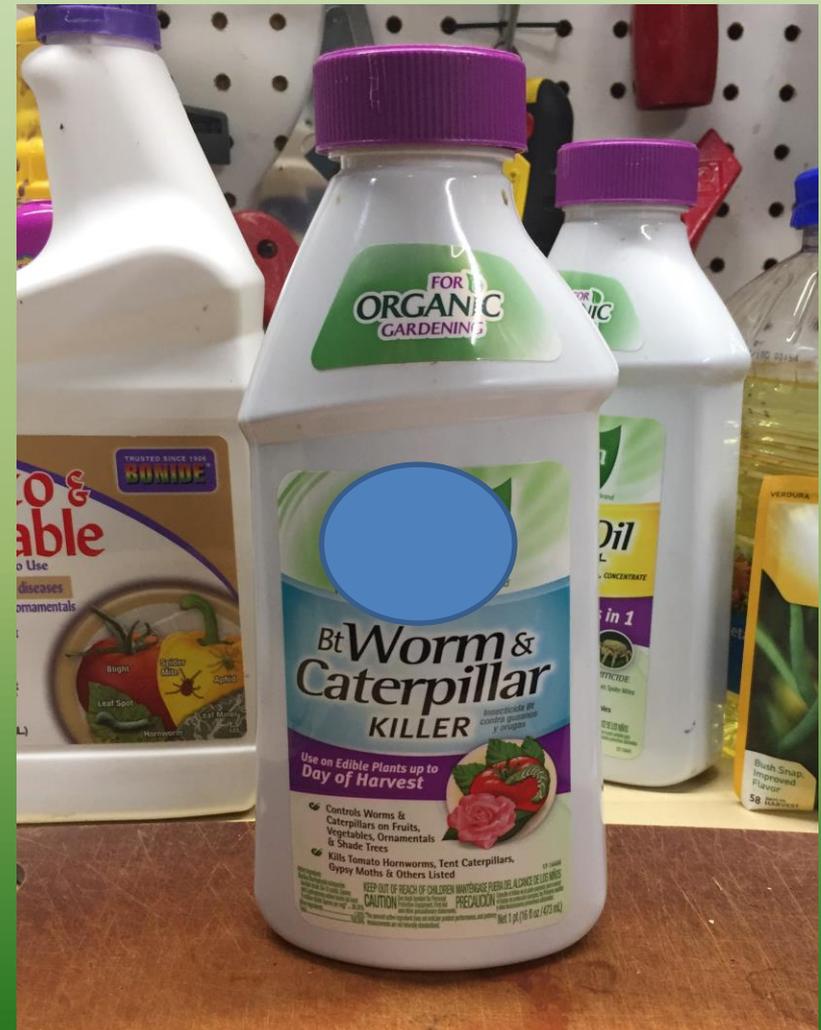
Caterpillar control

- **Bacillus thuringiensis**, often abbreviated as **Bt**, is a naturally-occurring bacteria that makes pests sick when they eat it. There are two strains commonly used as natural pesticides.
- Bt is one of the safest natural pesticides you can use in terms of controlling caterpillar pests of vegetables or fruits without harming beneficial insects.



Caterpillar control

- Apply Bt Thoroughly: In order for Bt to work, the caterpillar has to eat it.
- Apply Bt Carefully: Be sure to limit your spraying to the affected plants, so that you only target the problem caterpillars.
- Give Bt Time to Work: Bt takes several days to work, so be patient.





TOMATO



Caterpillar control



Caterpillar control



Protecting yourself (Organically) from biting insects

- Essential oils (eucalyptus, lemongrass, citronella, tea tree oil or rosemary) are the ingredients of many natural insect sprays.



Protecting yourself from biting insects

- The CDC confirmed that lemon eucalyptus oil can be as effective as DEET in repelling mosquitoes. Oil of lemon eucalyptus [active ingredient: p-menthane 3,8-diol (PMD)], a plant-based repellent, is also registered with EPA. In two recent scientific publications, when oil of lemon eucalyptus was tested against mosquitoes found in the US it provided protection similar to repellents with low concentrations of DEET



Organic Control for corn earworms

- **Corn oil & Bt combo-** Bt kills them when they ingest it, oils smother them, and either one is recommended for control. Apply 5 drops of corn oil (apply only once) to corn ear tips when the silks begin to turn brown.



Organic lawn care

- **Hydrolyzed fish fertilizers** contain a very low count of N-P-K (nitrogen, phosphorous and potassium), which is ultimately better for the soil. Using fish emulsion and seaweed extract you can create a mineral and nutrient rich foliar spray to use in your lawn/garden. The results are incredible - plants can absorb a lot of minerals and nutrients via leaves and stems.



Organic lawn care

- Another type of organic lawn fertilizer is **Milorganite**, made from sterilized sewage sludge (Biosolid). Although it contains only 6 percent nitrogen and 2 percent phosphorous, it works well as a lawn fertilizer but not as quickly as higher-nitrogen products and with much less risk of burning the turf.



Japanese Beetle control/ Lawns

- Originally developed by the USDA, Milky Spore is a naturally occurring bacteria *Bacillus popilliae* host-specific to Japanese beetles. In areas treated by Milky Spore, Japanese beetle grub eat the spores during their normal feeding patterns. Then the spores reproduce inside the grub, eventually killing grub within 7-21 days. As the grub decomposes, it releases millions of new spores and these multiply and kill other grubs.



Organic crabgrass control

- **Corn gluten meal** is a powdery byproduct of the corn milling process. Used for years as a supplement in hog feed, this natural protein is very effective for lawns and gardens as a plant food as well as a weed suppressor. Corn gluten meal products offer a non-toxic, yet effective alternative to traditional, chemical-based weed and feed products for weed control in gardens and lawns, paths and driveways.



Organic crabgrass control

- As a plant food, **corn gluten** has a N-P-K ratio of 9-1-0, or 9% nitrogen by weight. As a weed suppressant, corn gluten acts as a natural "pre-emergent" - it inhibits seed germination by drying out a seed as soon as it cracks open to sprout. These qualities make corn gluten an ideal 'weed n feed' product.

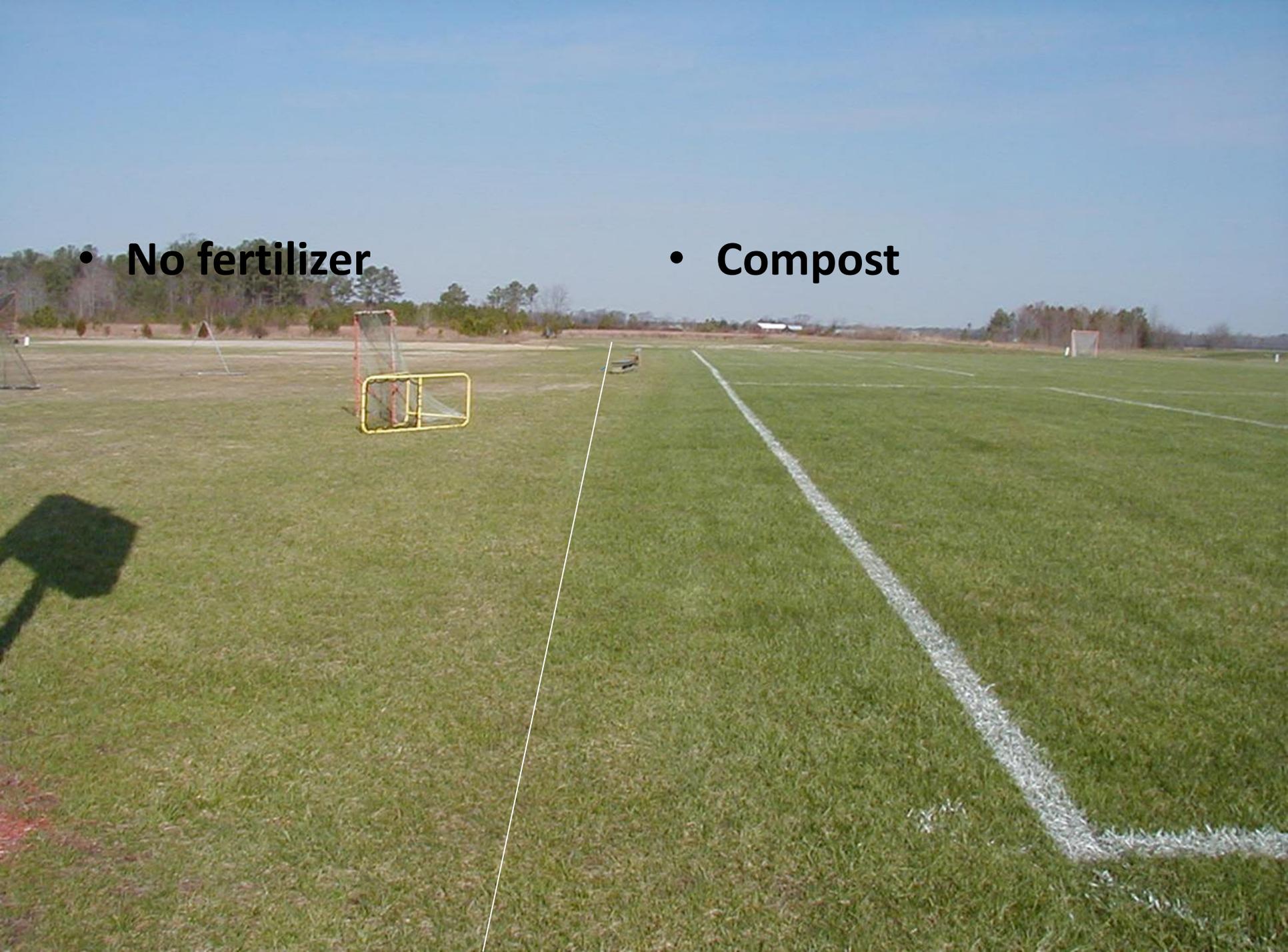


Organic lawn care



- **No fertilizer**

- **Compost**





• **Synthetic fertilizer**

• **1" Compost**

2" Compost

Compost blanket

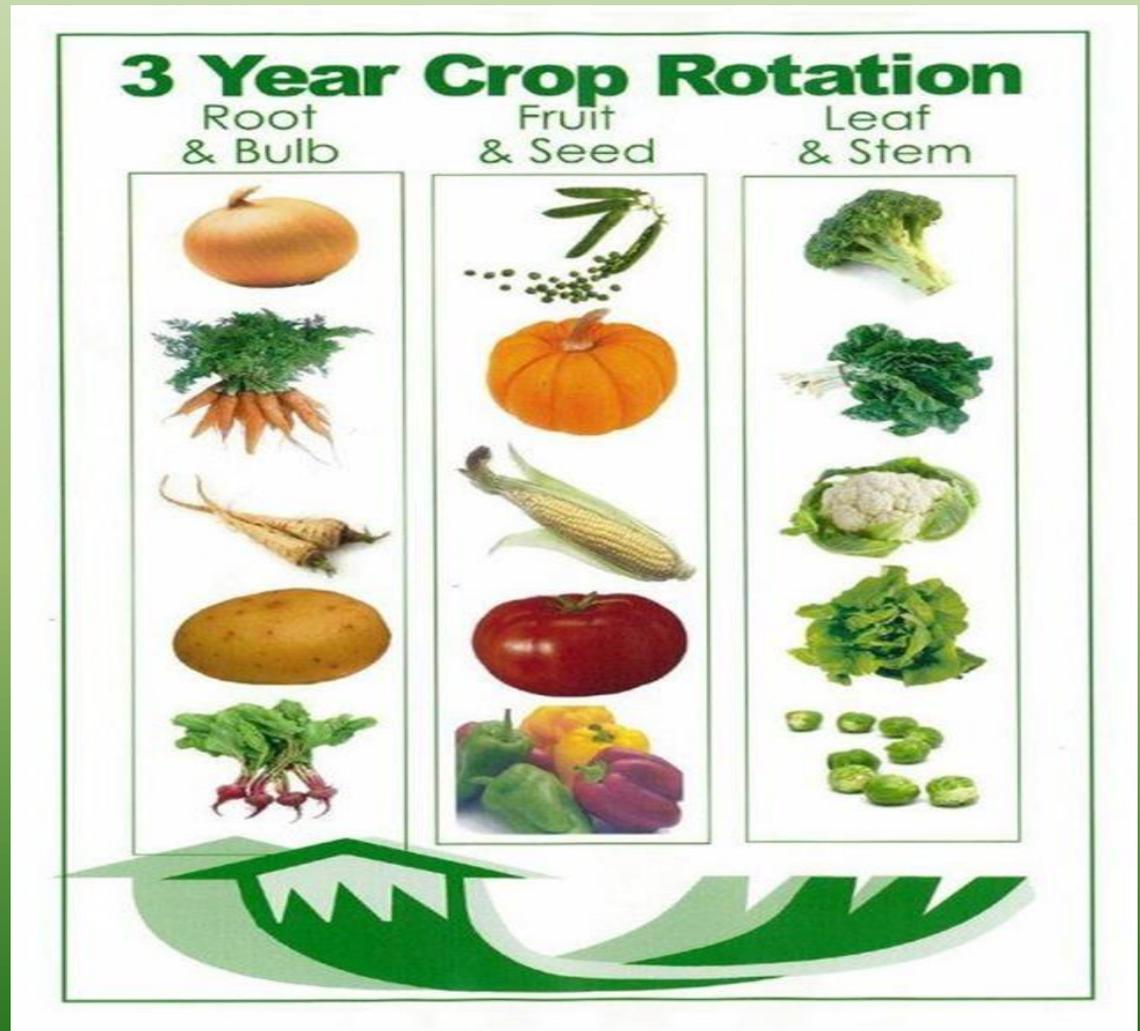


Vegetables-Crop Rotation

- Crop rotation is a systematic approach to deciding which crop to plant where in your vegetable garden from one year to the next. The goals of crop rotation are to help manage organic soil fertility and also to help avoid or reduce problems with soil-borne diseases and some soil-dwelling insects.

Crop Rotation

- Root = Potassium
- Fruit = Phosphorus
- Leaf = Nitrogen
- Legume = N Fixing

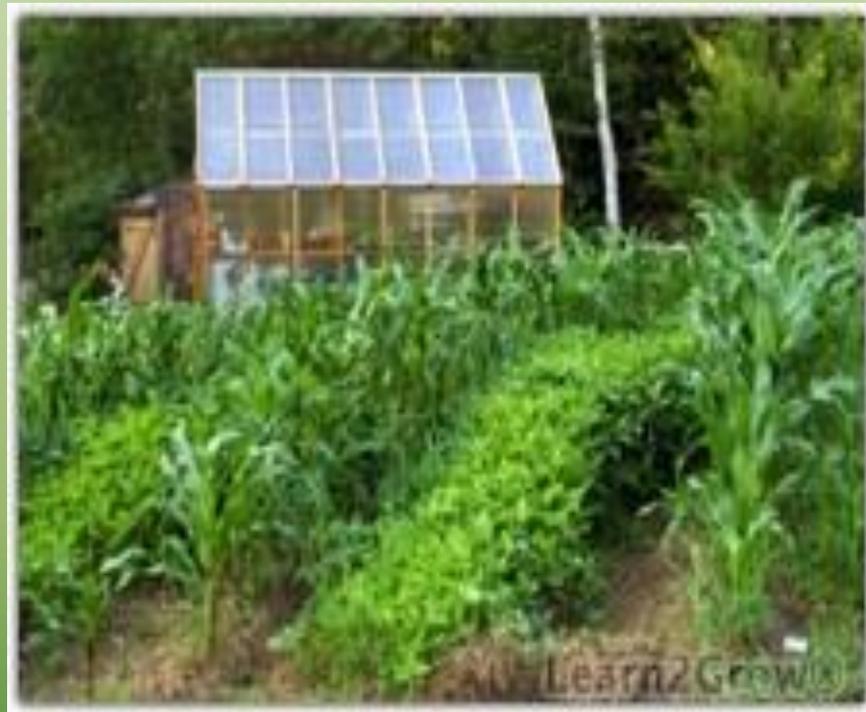


Companion Planting: Love/Hate Relationships in the Garden

- When you observe plants in an undisturbed natural setting, you may not realize that often they grow where they grow because they have a beneficial relationship with each other. It makes sense that when you follow through with this concept of mutual benefit in your own garden, you not only have flourishing plants, you also don't need an arsenal of chemicals to promote these happy relations.

Companion planting

- One of the best sources of nitrogen is legumes, which includes beans, peas and clover. These plants draw nitrogen from the atmosphere for themselves, as well as their neighbors, through bacteria in the soil known as rhizobium. Beans are often planted with other crops – corn, for instance – to provide nitrogen and reduce the need for fertilizer. Clover is planted with grasses for the same reason.



Companion planting (Beneficial Habitat)

- **Marigolds** are among the foremost examples of an attractive cultivated plant that helps repel or suppress pests by releasing a chemical deterrent. Nematodes (the unbeneficial kind) are among those plant-attacking insects repelled by thiophene, the chemical found in marigolds. This chemical is released in the soil from the plant's roots. Marigolds (go for the aromatic ones) are also believed to deter a variety of other pests through a scent that's obnoxious to many insects.



Companion planting (Beneficial Habitat)

- **Marigolds** also attract pollinators



Companion planting (Beneficial Habitat)

- Planting a border of marigolds around your garden may deter insects or conceal the scent of your vegetables, advises the Alabama Cooperative Extension Service.



Companion Planting (Beneficial Habitat)

- **Basil & Insects**
- Basil makes a great companion plant because it attracts butterflies to your garden and repels many harmful insects. Basil repels aphids, asparagus beetles, mosquitoes, tomato hornworms and white flies.



Companion Planting (Beneficial Habitat)

Dill is a great companion for:

- **Asparagus.**
- **Corn.**
- **Cucumbers.**
- **Onion.**
- **Lettuce.**
- **Vegetables in the cabbage family**
(Brussels sprouts, kohlrabi, broccoli, etc.)



Companion Planting (Beneficial Habitat)

- **Tomatoes** benefit from basil companion planting. Growing tomatoes and basil near each other is said to make each crop taste better.



Companion Planting (Beneficial Habitat)

- When considering rosemary companion planting, the best companion plant is broccoli as both plants benefit from being planted together. Planting rosemary nearby will also help your beans, broccoli, cabbage, carrots and hot peppers to flourish



“There’s rosemary, that’s for
remembrance.” -Hamlet,
Shakespeare



Scientists find
sniffing rosemary
can increase
memory by 75%

Please share!

Natural News

Companion planting

Dill planted among tomatoes can protect the tomatoes from tomato hornworms.

Some companions act as trap plants, luring insects to themselves. **Nasturtiums**, for example, are so favored by aphids that the devastating insects will flock to them instead of other plants.

Leafy greens like **spinach and Swiss chard** grow in the shadow of corn.

Bush beans tolerate the dapple shade that corn casts and, since their roots occupy different levels in the soil, don't compete for water and nutrients.

Sage scattered about the cabbage patch reduces injury from cabbage moths.

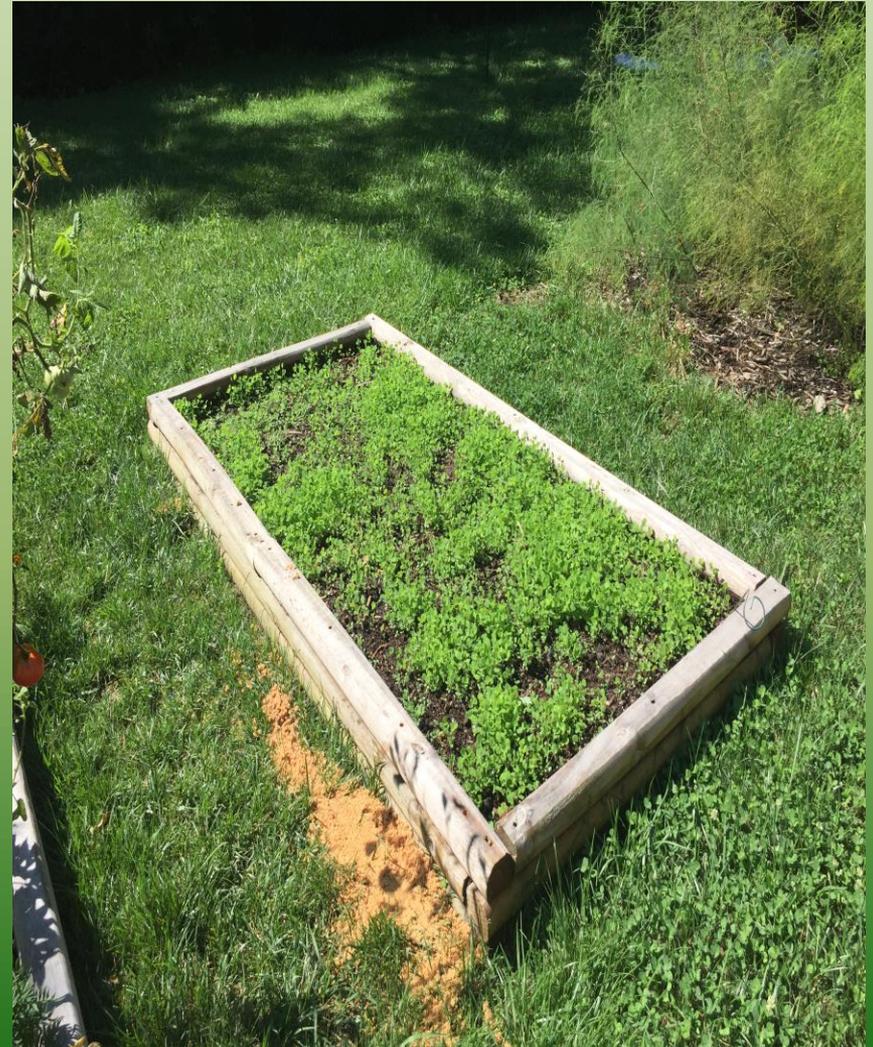
Geraniums A trap crop, attracting pests away from roses and grape vines, distracts beet leafhoppers, carrier of the curly top virus, keep away from solanaceous plants like eggplant, and tobacco

Cover crop (nitrogen fixer)

- **BENEFITS OF USING CRIMSON CLOVER AS A COVER CROP:**
- Nitrogen Fixation
- Improve Soil Quality
- Weed Suppression
- Erosion Control
- Attracts Beneficial Insects
- Builds Soil Organic Matter
- Increases Moisture Holding Capacity



Cover crop (nitrogen fixer)



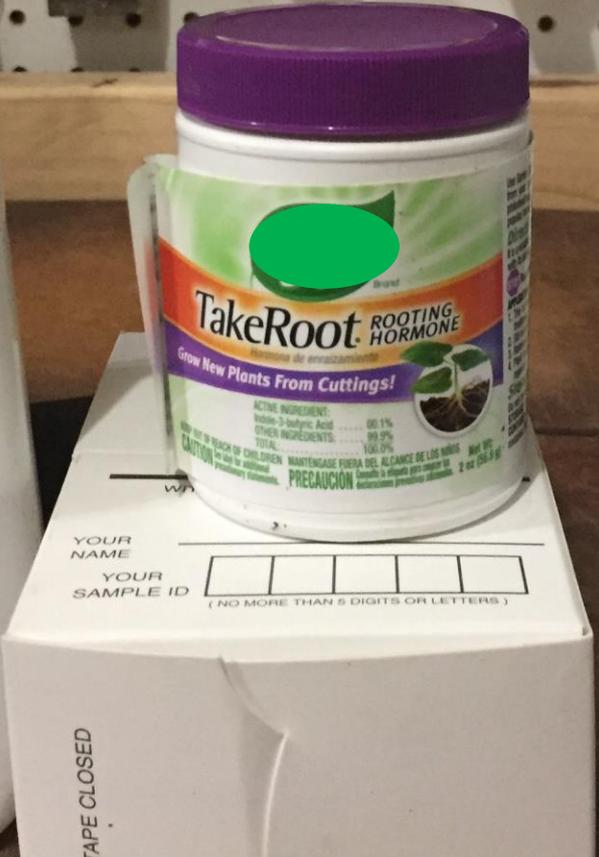
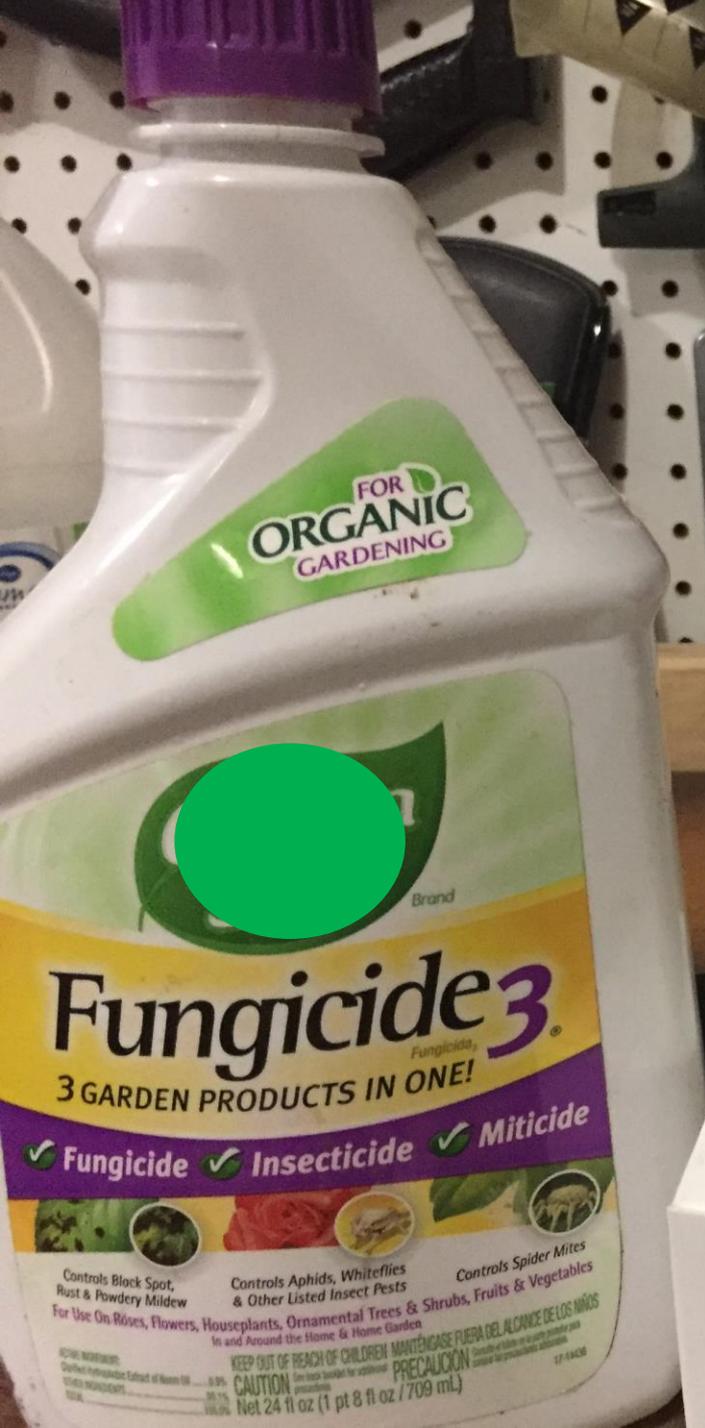




Organic? rooting hormone

- **U.S. Environmental Protection Agency**
- IBA is registered as a biochemical pesticide with the PC Code 046701. Historically, US EPA registered IBA as a synthetic hormone that is structurally related to the naturally-occurring plant hormone IAA (EPA, 1992). Recently, EPA became aware that IBA also occurs naturally in a variety of plant species (EPA, 2010) and would include this fact in its future documents about IBA (EPA, 1992; EPA, 2010).





Safety Data Sheet

GHS Classification of Substance or Mixture: Not classified as a physical hazard

GHS Label Elements:

Hazard pictogram(s):



Signal word:

WARNING

Hazard statements:

- Causes eye irritation
- Harmful if inhaled

Precautionary Statements:

- Wash hands thoroughly with soap and water after handling. If in eyes: Rinse cautiously with soap and water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
- Avoid breathing dust. Use only outdoors or in a well-ventilated area. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison control center or doctor if you feel unwell.

Section 3 - Composition / Information on Ingredients

Chemical Name	CAS#	Weight Percent
Indole-3-butyric acid	133-32-4	0.10%

Note: Ingredients not identified are proprietary or non-hazardous. Values are not product specifications.

Section 4 - First Aid Measures

Eye contact:

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Page 1

Organic? rooting hormone

- Commercial rooting hormone contains Indole-3-butyric acid, a concentrated **synthetic** version of this naturally occurring rooting hormone, as well as a chemical fungicide.



Organic rooting hormone

- **Apple cider vinegar** is all you need to create this organic rooting hormone, and too much may prevent rooting. A teaspoon of vinegar in 5 to 6 cups of water is enough.



Organic rooting hormone

- **Honey** has many health benefits. It is a natural antiseptic and contains antifungal properties — both of which are believed to be one of the reasons honey as a root hormone seems to work so well.



Organic rooting hormone

- 1 tbsp honey
- 2 cups of boiling water
- Mix the honey with your boiling water (do not boil the honey itself) and allow to cool. Place this mixture in an airtight container (such as a mason jar) until ready to use, storing it somewhere away from light. This mixture should keep up to two weeks.



Organic rooting hormone

- Willow trees possess a certain hormone that can be used to enhance root development in plants. This makes it possible to grow a new plant simply by pouring willow water over it or by rooting plants in water made from willows.



Organic rooting hormone (from Willow Trees)

- Remove any leaves and cut them into 1- inch pieces. This allows more of the auxin hormone, IBA, which encourages root growth, to leach out.



Organic rooting hormone (from Willow Trees)

Cut branches (green if possible)
into 1' pieces

Place in a container
that can be sealed



Organic rooting hormone (from Willow Trees)

Boil water

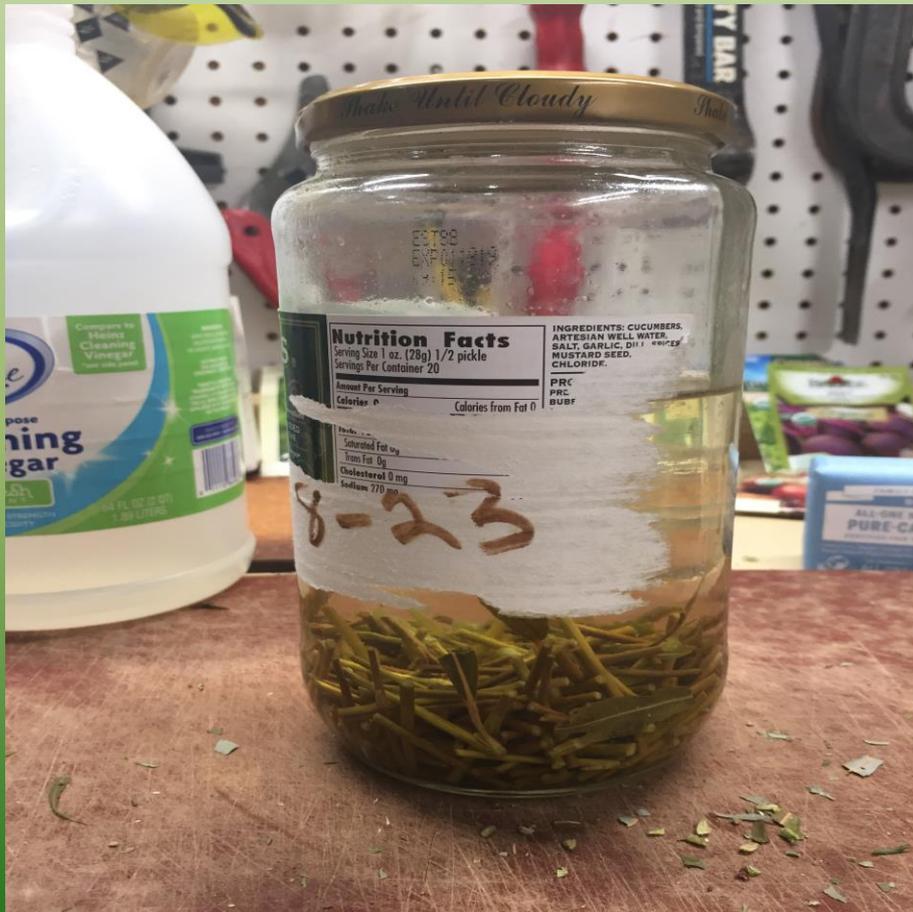
Pour into jar with cuttings -1/3 twigs to 2/3 water- seal and date



Organic rooting hormone (from Willow Trees)

Let sit for 24-48 hours.

48 hours later- strain out the willow
-liquid remaining ready to use



Organic rooting hormone (from Willow Trees)



Organic rooting hormone (from Willow Trees)

Compost Leaf sludge



Comparison of solutions



Propagating Using Organic rooting hormone (from Willow Trees)

Take your cutting



Trim the lower leaves



Propagating Using Organic rooting hormone (from Willow Trees)

Dip cutting in rooting solution



Place cutting in growing medium



Propagating Using Organic rooting hormone (from Willow Trees)

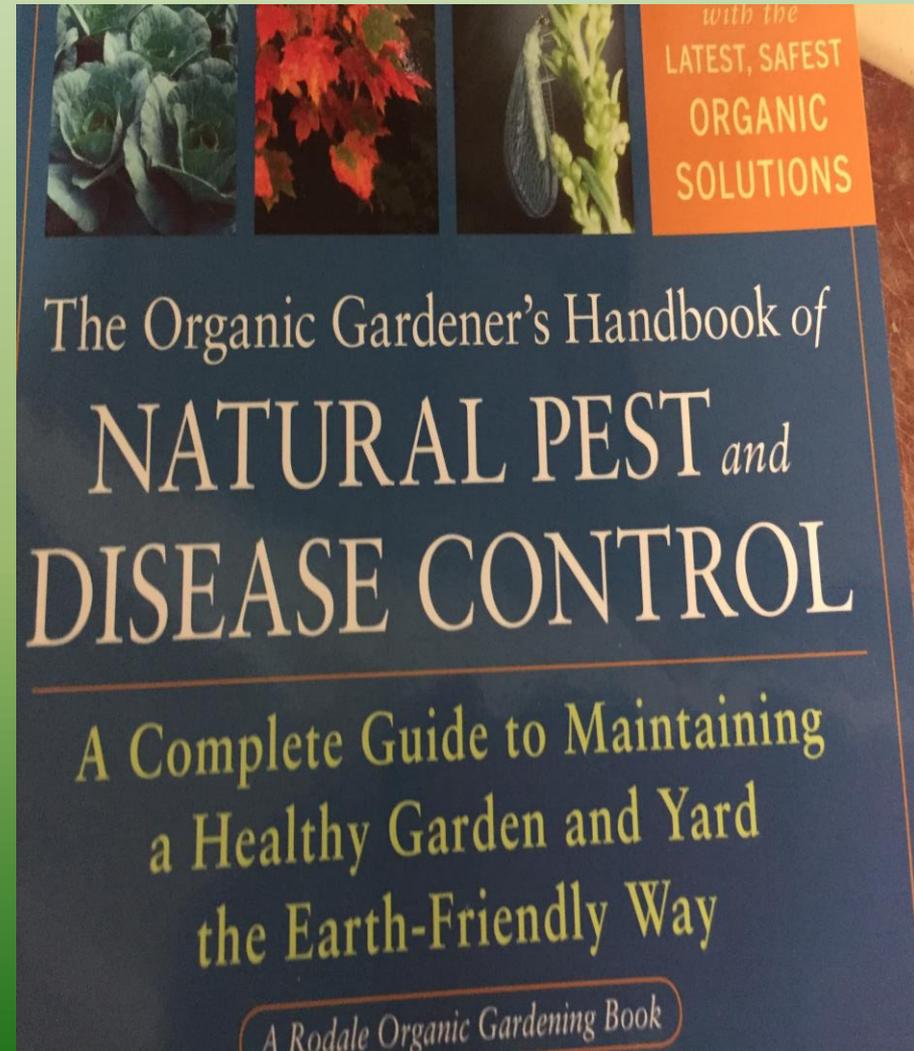
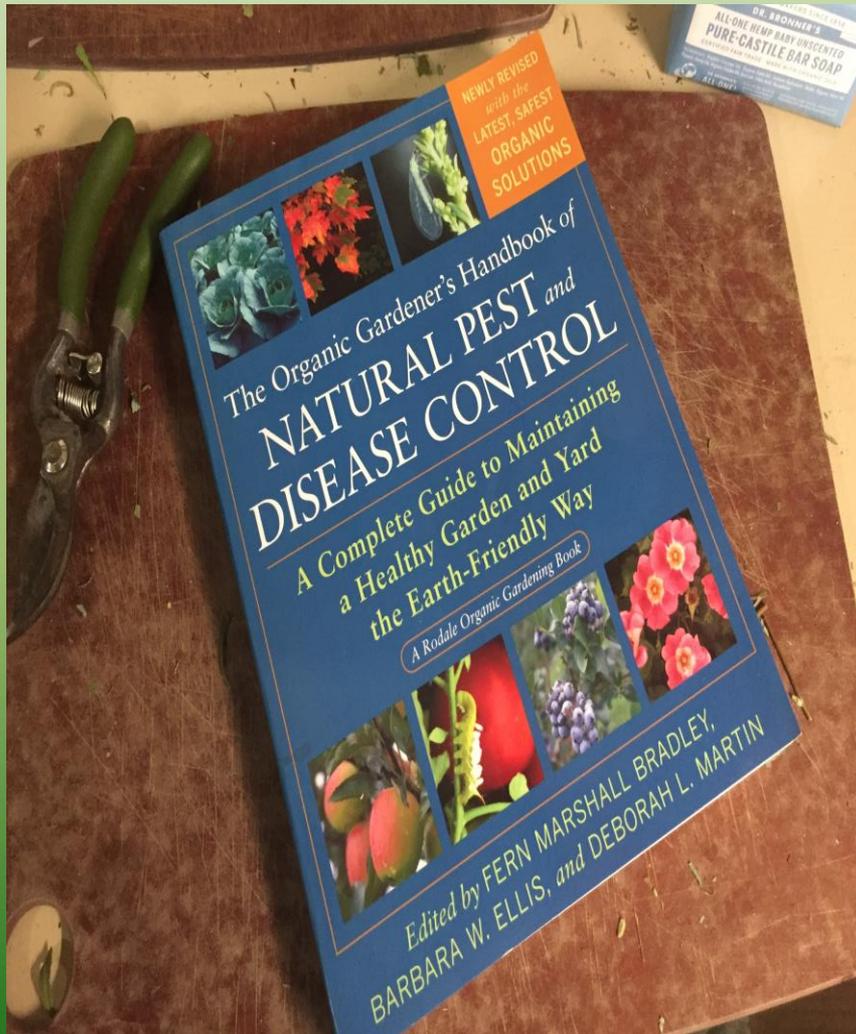


3 uses for Cinnamon

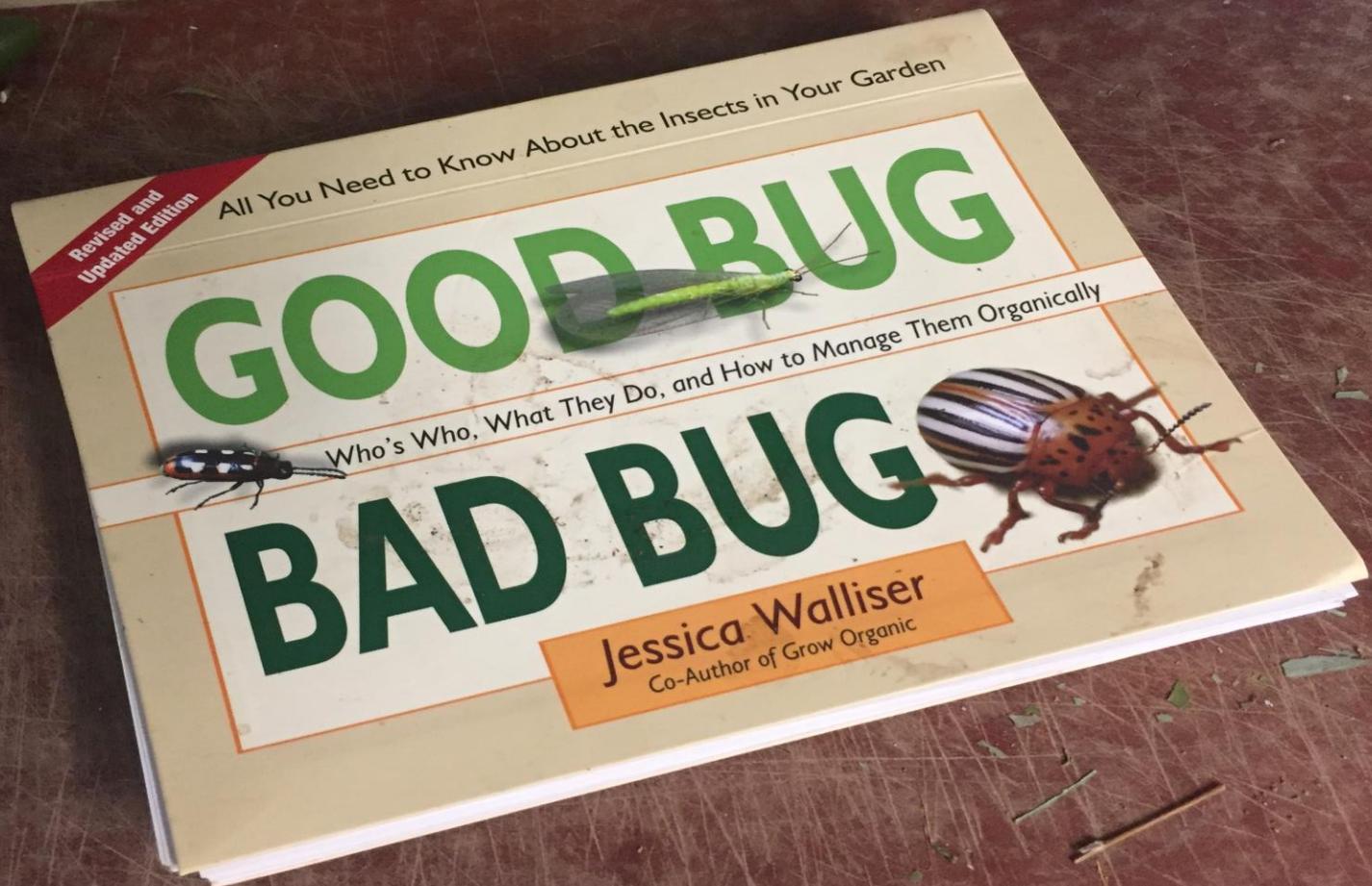
- Cinnamon kills fungus and bacteria and will help to keep those cuttings free of disease while rooting. You can dip your cutting in willow tea and then cinnamon, they go hand in hand.
- For Seedlings.
- Plant wounds-Overzealous pruning or a slip of the weed whacker and you'll have a plant with a wound that needs fixed up. Simply dust cinnamon on the wound to encourage healing and prevent fungal infection at the same time.



Must-Have books



Must-Have books



Do your research!!

- <https://www.usda.gov/topics/organic>
- <https://www.ams.usda.gov/rules-regulations/organic>
- <https://content.ces.ncsu.edu/extension-gardener-handbook/17-organic-gardening>
- Organicgrowersschool.org
- Motherearthnews.com
- Southernexposureseed.com
- Dr. Jeanine Davis, NC State extension
<https://www.youtube.com/watch?v=0O7tm46PBq>







Don't believe
everything you read
on the internet just
because there's a
picture with a quote
next to it.

ALBERT EINSTEIN

