Organic Gardening

Ten best organic gardening practices:

1. Enrich your soil- Plant health starts with the soil. Get your soil right, and many other potential problems are apt to be less troublesome. You can improve the ratio of air and water in your soil by avoiding excessive tilling, compacting the soil as little as possible, and adding organic matter.
2. Mulch early, mulch often.
3. Choose healthy and disease-resistant plants
4. Put plants in the right place.
5. Use organic, slow-release fertilizers
6. Encourage beneficial organisms
7. practice integrated pest management.
8. Control pests with traps and barriers
9. avoid the most toxic pesticides
10. Promote diversity

Treating Weeds Organically:

- avoid conditions that favor weeds: compacted soils or over-tillage; overwatering; and excessive nitrogen
- weeds in beds should be hand weeded, spot sprayed with organic herbicides, smothered with mulch or cultivated by hand
- flame weeders
- hot water weed burners
- vinegar or salt if used only on walkways or terraces where weeds emerge between cracks.
- corn gluten-pre-emergent
- organically approved herbicides based on ethanoic and acetic acid or potassium salts of fatty acids

An Overview of Some Common Organic Garden Pesticides
Organic Pest Management:

- plant pest-resistant plant species and varieties
- carefully inspect and remove any infestation before planting
- diversifying plant species and varieties to avoid monocultures
- lure beneficial insects

- remove and properly dispose infested plant parts
- boric acid for ant control (cannot be used on edible plant parts)
- common glue (casein) to seal pruned rose canes against borer damage
- mechanical measures, such as traps, nets hand picking or vacuuming
- Pheromones or other attractants used for monitoring or trapping g pests or for mating disruption.

1. Release predators or parasites

lacewing eggs or larvae, parasitic wasps, or insect-attacking nematodes. Nematodes, commonly referred to as 'beneficial nematodes' or 'predatory nematodes,' are microscopic worms

2. Releasing insect or arthropod pathogens:

Milky Spore®bacteria- Milky Spore is a natural bacteria that infects the grubs of Japanese Beetles with Milky Spore Disease. The disease paralyzes and kills the host grub. When the dead grub breaks down, it releases billions of new spores into the soil, which in turn infect and kill other grubs. An infected grub will die within one to three weeks of being infected by Milky Spores.

Beauveria bassianais a fungus that is commonly found in soils worldwide. It kills by infection as a result of the insect coming into contact with fungal spores. Effective on insects such as thrips, whiteflies, aphids, caterpillars, weevils, grasshoppers, ants, Colorado potato beetle, and mealybugs.

3. Plant extracts:

Garlic Spray

Target insects: Aphids, cabbage looper, grasshoppers, June bugs, leafhoppers, mites, squash bugs, slugs and whiteflies. May also help to repel rabbits! Never use oils sprays on Blue Spruce as it will remove the blue waxy coating on the needles! Because garlic contains naturally occurring sulfur it also acts as an antibacterial agent and fungus preventative.

Pepper Spray

Target insects: All-purpose, just like the pepper dusts a spray made from hot peppers will release the capasaicin compound to repel insects

plant essential oils, such as clove oil (eugenol), floral extracts (2-phenethyl propionate), thyme oil (thymol) rosemary oil, or wintergreen oil.

4. Bt (Bacillus thuringiensis)

Insecticides whose active ingredients are extracted from naturally occurring microbes, such as Bt (Bacillus thuringiensis)
Ingredients: bacteria. There are more than 80 types of Bt used as pesticides
Application: Generally available in powdered form that is sprinkled or dusted on a plant. It must be eaten by the targeted insect.
How It Works: Bt is a stomach poison. It releases toxins in the stomachs of susceptible insects which cause them to stop eating and starve.
Pros: Bt strains are very host specific and will not harm people, pets, birds or bees
Cons: Slow acting. It may take days for the insect to completely stop eating and die. Breaks down quickly. Can kill 'good insects' like butterfly larva Breaks down rapidly in sunlight. Can be a skin irritant.
Precautions: Users are advised to handle all microbial insecticides cautiously

5. **Horticultural Oil** -dormant & summer oils

Dormant oils are used during the winter season when plants are dormant to control
overwintering stages of insects such as aphids, spider mites and scales. An oil applied
during the dormant period suffocates the overwintering eggs of aphids and spider mites or suffocates the adult, in the case of scales. Use only on woody plants as a dormant spray.

Summer oils are a lighter version of dormant oil and can be applied to actively growing plants. Use summer oils to control aphids, mites, thrips, scales, mealybugs, and their eggs. The use of oils to control fungal diseases is on the rise. Research is underway on the use of oils to control powdery mildew and rust diseases on a variety of ornamentals, including roses.

Ingredients: derived from petroleum distillates and although most oils available to home gardeners are petroleum-derived, but you can find plant-based oils, too
Application: Mixed with water and sprayed onto foliage Use horticultural oils on woody ornamentals and trees to kill scale, aphids, mites, and other soft-bodied insects.
How It Works: Coats and suffocates insects. Oils also kill insect eggs by penetrating the shells and interfering with metabolic and respiratory processes. In addition, oils disrupt feeding by insects such as flea beetles, whiteflies, and aphids without necessarily killing them.

Pros: Low toxicity to humans, pets or birds. No toxic residue. **Horticultural oils** may also control powdery mildew and prevent the spread of plant viruses transmitted by aphids.
Cons: Horticultural oils are nonselective, meaning they kill both pests and susceptible beneficial insects (predatory mites, for example). Most effective against soft bodied insects. Can cause bluish evergreens to temporarily lose their blue tint. Can burn leaves
Precautions: There are several grades. Be sure to use the one that is right for the season in which you are spraying. Follow package directions carefully. Some plants, including maples, junipers, cedars, and spruce, are sensitive to these oils.
Look for types approved by the Organic Materials Review Institute (OMRI).

6. Insecticidal Soap
Ingredients: Insecticidal soap is sodium or potassium salts combined with fatty acids. Soaps have been used for 200 years or more and are effective against soft- bodied insects such as aphids, some scales, psyllid, whiteflies, thrips, mealybug and spider mites. Soaps can be purchased commercially or you can make your own by mixing 3 to 6 tablespoons of dishwashing liquid with 1 gallon of water.
Application: Insecticidal soap must come in direct contact with the insect. It is no longer effective once it has dried.
How It Works: How soaps kill Insects is poorly understood. It is thought that they remove the protective oils and waxy covering of the insect. They are strictly contact insecticides and must be applied directly to the insect to be effective.
Pros: One of the safest pesticides, Non-toxic to animals, No residue, You can use on vegetables up to harvest.
Cons: Certain plants may be sensitive to soaps, resulting in leaf burn. To avoid phytotoxicity, always test a soap spray on a small area of the plant. Can burn or stress plants. Don't use in full sun or high temperatures.
Precautions: Check label for specific plants that may be damaged apply carefully

7. **Botanical insecticides:** Note that these are broad spectrum poisons, hazardous to humans, wildlife and soil organisms as well as beneficial insects. They should be used with discretion and not on a regular basis. They must not be formulated wit EPA List 1 inert ingredients. All label restrictions must be followed, including proper protective clothing for the applicator.

Neem

Ingredients: Contains 2 ingredients, azadirachtin (AZA0 and liminoids, both from the seed kernels of the neem tree fruit.

Application: Sprayed onto plant leaves.

How It Works: Upsets the insects hormonal system and prevents it from developing to its mature stage. Most effective on immature insects and species that undergo complete metamorphosis.

Pros: Non-toxic to humans

Cons: Washes away in rain. Slow acting. Breaks down in sunlight, indiscriminate pesticide

Precautions: Keep humans/pets from treated leaves until they dry.

Pyrethrins

Ingredients: Derived from Chrysanthemum cinerariifolium

Application: Generally found in powder form and dusted on leaves.

How It Works: Poisons the insect, causing a quick death

Pros: Quick acting. Low toxicity to animals. Degrades within a day.

Cons: Broad spectrum insecticide. Kills any insect. Very toxic to honeybees

Precautions: Use cautiously, only when you have a major problem with hard-to-kill insects.

8. Diatomaceous earth

Ingredients: Made from tiny fossilized water plants

Application: Fine powder, dust apply a light coat in areas where pests are found

How it works: Kills cockroaches, ants, slugs, fleas, earwigs and other crawling insects by such as patios, window and door frames, outdoor sills. Sprinkle dust around hosta and other plants susceptible to slugs. Repeat treatment as necessary.

Pros: Very effective against slugs, there is no environmental hazard

Cons: If possible, purchase natural diatomaceous earth, which is mined, ground and sifted. The swimming pool grade contains crystalline silica, a reparatory hazard. Read label

9. Sabadilla

Ingredients: Ground seeds of the sabadilla lily

Application: Comes as a fine powder and used as a spray

How It Works: Acts as a stomach poison

Pros: Very effective against the true bugs (members of the Hemiptera order) Sabadilla is considered among the least toxic of botanical insecticides.
Cons: Highly toxic to bees. Very irritating to the mucus membranes of mammals, it can
irritate eyes and produce sneezing if inhaled
Precautions: Use as a last resort

10.Potassium Bicarbonate (fungicide)
Ingredients: Potassium bicarbonate usually combined with horticultural oil and / or a substance to improve spreading and coverage of the leaves. There are commercially available products such as GreenCure® Milstop™ and Bi-Carb Old Fashioned Fungicide, **or you can prepare your own**
Note: Baking soda or sodium bicarbonate is often recommend for similar fungus problems, however research has shown potassium bicarbonate works better and is safer on plants.
Application: Spray at the first sign of disease or use as a preventative before infection.
How It Works: It's still unclear, but it appears that bicarbonates can damage the cell wall and possible create a pH that is not conducive to further fungal growth. The effect is immediate.
Pros: Lasts 2 - 3 weeks as a preventative. You can use on vegetables up to harvest.
Cons: Can burn plants, especially if used in full sun.
Precautions: Check label and test on a small area before spraying entire plant

Remember, just because a pesticide is organic doesn't mean it's not toxic. Always read and follow the label instructions and cautions
ORGANIC PEST CONTROL *PROHIBITED* LIST:
all synthetic insecticides
all soil fumigants
nicotine
mothballs
all other long-term poisons

<u>Recommended Products: (The Herb Farmacy)</u>

Additives:
Phosphate- "Green Sand"
Organic fertilizer "Neptune's dried seaweed and fish" mix in water

“cockadoddle do” Chicken fertilizer - good on lawns can go in spreader
“Purely organic” Lawncare 877- 94- organic
Insecticidal soap “Safer”
Simple Green for Scale