OSU Extension Service Metro Master Gardener™ Program
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Organic Gardening Fundamentals

Growing in popularity

A 2004 survey by the National Gardening Association found that 5% of America's 90 million households garden only with organic management techniques and an additional 31% use both synthetic and all-natural fertilizers and pest controls. This baseline data is complemented by forward-looking questions, which predict that the number of strictly organic gardeners will nearly double in coming years (National Gardening Association, 2005). This trend is particularly evident in urban areas.

What does "organic" mean?

As defined by US Department of Agriculture (USDA) National Organic Program (NOP):

- Mostly do not use synthesized chemical fertilizer or pesticides
  - Derived from plant, animal, mineral sources
- Prohibit the use of
  - Genetically modified organisms
  - Ionizing radiation, and
  - Sewage sludge-based fertilizers
- Labeling standards for foods
  - "100 percent organic" contain only organic ingredients (and usually a single ingredient such as a fruit, vegetable, eggs, etc.)
  - "Organic" must contain at least 95% organically produced ingredients.
  - Only products meeting the above standards may display the official "USDA Organic" seal
  - Processed products that contain at least 70% organic ingredients can use the phrase "made with organic ingredients
  - Animals raised in an organic operation must be fed organic feed and be given access to the outdoors. Antibiotics and growth hormones are prohibited.

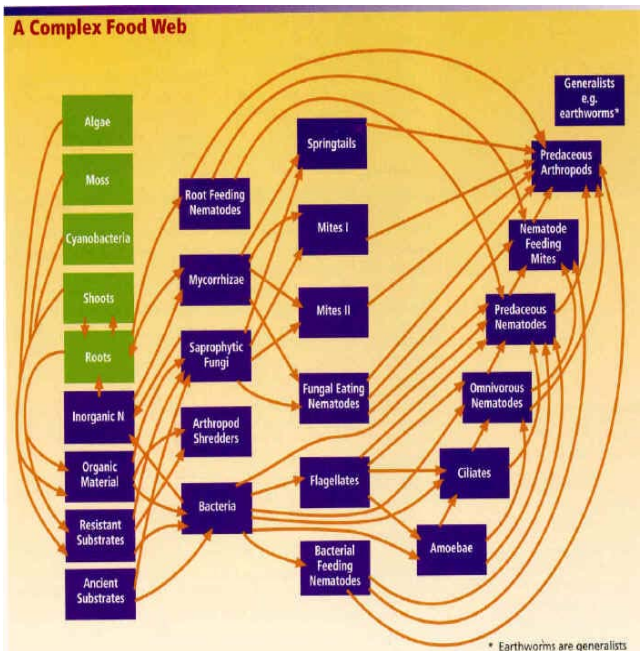
Specifics for organic gardeners

Build healthy soil by adding composted organic matter

- Helps create favorable soil structure by feeding soil organisms, which create a glue that holds soil together. Soil life also helps to make nutrients from mineral soil and organic matter available to plants, particularly when soil temperatures are warm.
- Creates pore space for air and water.
- Increases drainage in clay and water holding capacity in sandy soils.
- Provides some nutrients, depending on source of compost, but unpredictable.
- It's hard to make good compost at home from garden wastes; it's easier to make good compost from food scraps through worm composting.

Biorational Pest Control

- Prevention
  - Wise plant choice, hygiene, proper care
- Manage own expectations
- Attract beneficial organisms by providing habitat for



http://soils.usda.gov/sqi/concepts/soil biology/images/B-4.jpg

birds, snakes, frogs, and beneficial insects, and other parts of intact ecosystem.
    - Provide diversity of plants (flower type, color, architecture, annual, perennial) and water
- Understand life cycle of pests and diseases
- Cultural/physical techniques for pest management
- Judicious use of least-toxic pesticides

Organic Products Research

- USDA National List of Allowed and Prohibited Substances
- Organic Materials Review Institute (OMRI)

Use of organic fertilizers

- Get a soil test with interpreted results
- Many different materials to choose from; do your homework!
- Organic fertilizers N-P-K (see table)
- Granular organic fertilizers are slow-release and the nutrients are generally not immediately available to plants and most will not burn
    - Incorporate organic fertilizers several months in advance as nutrients are not immediately available (except blood and fish meals)
    - Use a water soluble organic fertilizer to get plants off to a good start

Total nitrogen, phosphate, and potassium content of selected organic fertilizers

Material	Nitrogen (%)	P_2O_5 (%)	K_2O (%)
Cottonseed meal	6–7	2	1
Blood meal*	12–15	1	1
Alfalfa	2	0.5	2
Bat guano*	10	3	1
Fish meal*	10	4	0
Fish emulsion*	3–5	1	1
Bone meal	1–4	12–24	0
Rock phosphate**	0	25–30	0
Greensand	0	0	3–7
Kelp meal	1	0.1	2–5

Sustainable Gardening, Chapter 2

Weed control in organic gardens

- Diligence!- Don't let weeds go to seed
- Hand pulling and a sharp hoe
- Sheet mulching (wet soil, layer of overlapping cardboard, mulch on top) can smother annual weeds but does not work for perennial weeds like quack grass and field bindweed
- Stale seed bed (prep soil, water, flush weeds, kill them, repeat if possible)
- Organic herbicides made from vinegar (acetic acid), clove oil, citrus oil, soaps, etc. will burn foliage and can work on annual weeds, especially when young. May require repeat applications.

Organic products to control insects and diseases

- Disease control
    - Horticultural oils, copper based, sulfur, Serenade (*Bacillus subtilus*), Baking soda (K)
- Pest control
    - Neem oil, *Bacillus thuringiensis* (*Bt)*, *Beauveria*- biological, horticultural oils, insecticidal soap, iron phosphate, kaolin clay, lime sulfur, pyrethrins, rotenone, spinosad, sulfur
- Just because a product is labeled as *organic* does not mean that it is completely safe
- **Read and follow direction on label! The label is the law.**
  With all products, consult with Organic Materials Review Institute (OMRI) and National Organic Program guidelines to determine if it organic for certification.

Further Study

- eXtesnion. What is Organic Farming. http://www.extension.org/article/18655
- National Organic Program Background Information. USDA. http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3004443&acct=nopgeninfo.
- ATTRA- NCAT. Sustainable Agriculture: An Introduction. http://www.attra.org/attra-pub/summaries/sustagintro.html.
- Maritime Northwest Garden Guide- Seattle Tilth
- Growing Vegetables West of the Cascades- Steve Solomon
- The Truth About Organic Gardening- Jeff Gillman