

Organic Vegetable Production



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Key Points

- Overview of organic production
- Soil amendments
- Crop rotation
- Cover crops
- Pest control
- Variety selection

The Organic Approach

- Recycles nutrients and waste
- Minimizes external inputs
- Accept some damage
- More time conditioning soil and scouting
- Should use a balanced approach
- Start small



Soil



- Soil is the key!
- Benefits of organic matter
 - Improves soil structure
 - Improves water and nutrient holding capacity
 - Supports biological activity
 - Contributes nutrients, both minor and major
 - Help veggies survive nematode stress

Soil: What to do?

BUILD SOIL ORGANIC MATTER

- Minimum of 4" in top 12" of soil
- Amendments as soil builders, not fertilizers
- Be generous with organic amendments
- Raised beds = better drainage & easier to amend

Soil Amendments



Composted Manure

- Best source of fertilizer and organic matter
- Aged for at least 30 days.

Raw manure

- 120 days between application and harvest if the edible portion of the crop comes into direct contact with the soil.
- 90 days if the edible portion never touches soil.
- Do not apply raw manure close to harvest
- Raw manure may burn plants

How much manure and when?

Before planting:

- Cow, horse, hog — 25 lbs per 100 sq/ft
- Poultry, sheep, rabbit — 2 lbs per 100 sq/ft

After planting:

- Cow, horse, hog — 5 lbs per 100 sq/ft of row
- Poultry, sheep, rabbit - 3 pounds per 100 sq/ft of row

Soil Amendments



Compost

- Decomposes, combines, and yields artificial manure.

How much and when?

- Broadcast three weeks or more before planting.
- 25 pounds per 100 square feet, or 1/4 pound per square foot.
- Larger amounts are even more beneficial, up to 200 lb/100 sq ft. (2 lb/sq ft.)

Soil Amendments



Lime → raises pH (6.0)

Bone Meal → Source of calcium

Blood Meal → Source of nitrogen

Milorganite → source of nitrogen

Fish Emulsion → source of nitrogen

Chitin → decreases soil borne diseases

Soil Amendments

Mulch

- Retains moisture
- Maintains soil temp
- Prevents some diseases
- May discourage some insects
- Decrease weed populations



Sources of Mulch

- Newspaper/ wheat straw
- Pine straw
- Hardwood mulch
- Chopped leaves
- Plastic
- Cover crops

Crop Rotation is Important!

Why?

- Dispersal ability of pest disease
- Host specificity
- Manage weeds
- Manage nutrients and build soil

Rotations based on:

- 1) Nutrient needs
- 2) Vegetable families

Crop Rotation to Manage Nutrients

Heavy Feeders

Corn
Spinach
Squash
Tomatoes
Broccoli
Cabbage

Light Feeders

Peas
Peppers
Radish
Beans
Onion
Mustard greens

For a complete list visit:

<http://aq.arizona.edu/pubs/garden/mg/vegetable/fertilizing.html>

Crop Rotation is Important!

Group 1	Group 2	Group 3	Group 4	Group 5
Beans Peas	Potatoes Eggplant Tomatoes Peppers	B. Sprouts Cauliflower Collards Lettuce Radish Spinach Turnips	Cantaloupe Cucumber Honeydew Pumpkin Squash Watermelon	Beets Carrots Garlic Onions Shallots

Irrigation

- Thoroughly wet the soil once a week unless sufficient rain falls.
- Use efficient methods of irrigation
 - Drip or soaker hoses
- Wet foliage = disease problems



What is a Cover Crop?

- Benefit soil and/or other crops, but is not intended to be harvested for feed or sale.

Types of Cover Crops

Legumes and Grasses
Fixers and Lifters

Why Use Cover Crops

- ☺ Weed suppression
- ☺ Nitrogen management
- ☺ Improve soil quality
- ☺ Erosion control
- ☺ Insect Management



Nitrogen Lifters

- Grown to retrieve available nutrients still in the soil following a harvested crop
- Prevents nutrient leaching
- Species differ (most grass or grain)
- Can lift 90% of N
- Examples

Rye ----->
Wheat
Ryegrass
Sorghum-Sudan
Millet



Nitrogen Fixers

- Help maintain soil organic matter and add nitrogen to the system
- Incorporated into soil or killed on the surface before they are mature
- LEGUMES
- Examples
 - White or Red Clover
 - Southern Peas
 - Velvet Bean ----->



Cool Season Cover Crops



WHITE CLOVER*



LUPINE*



OATS



RYE



WHEAT



HAIRY VETCH*

Warm Season Cover Crops



SORGHUM/SUDAN



SOUTHERN PEA*



HAIRY INDIGO*



PEARL MILLET

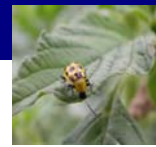


SUNNHEMP*



VELVET BEAN*

Pest Control Materials



- Neem
 - Aphids, whiteflies, armyworms
- Pyrethrin
 - Many pests (toxic)
- Bt
 - Caterpillars
- Insecticidal soaps
 - Soft bodied insects (aphids, spider mites, thrips, etc)
- Diatomaceous earth
 - Soft bodied and ground crawlers

Variety Selection

- Resistance
- Tolerance
- Susceptible
- Key to Success
- Especially Important in Organics
- Viruses – only option most of the time



Keep Things Clean!

- Remove old crops after they finish
- Pick off damaged or diseased fruit
- Remove plants with viruses immediately
- Do not smoke or use tobacco near garden
- Turn soil frequently
- Use certified seed

http://duval.ifas.ufl.edu/agriculture_production_agriculture.shtml

