

Grow your own vegetables

Master Gardener Specialty Training
Shortcourse 2010
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Course overview

Objectives:

- Build on MGV General Training with in-depth study of cultivation of vegetables in the personal garden
- Reinforce current knowledge of experienced vegetable gardeners
- MGVs will be able to better assist public with vegetable gardening questions
- Community partners will increase knowledge of research based vegetable gardening practices & increase awareness of UW-Extension resources



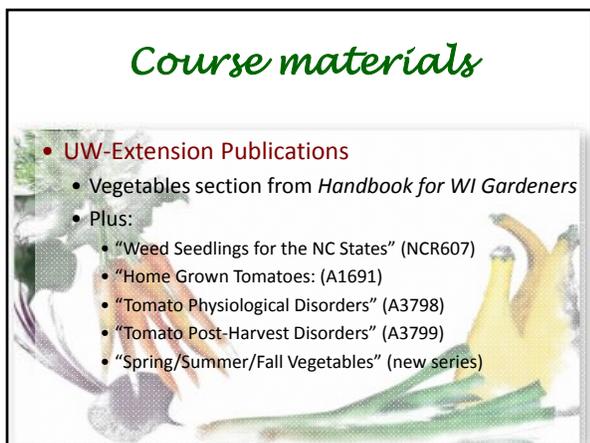
Course schedule

- Session #1: Introduction and overview
- Session #2 & #3: Crop by crop examination
- Session #4: Pests and pest management insects, diseases, weeds and wildlife



Course materials

- **Community Partners**
 - “Growing Your Own Vegetables”
 - Summaries of entomology, plant pathology, weeds.
- **MG Program Manual**
 - Unit 9A: “Vegetables for the Home Garden”
 - Unit 2C: “Organic Gardening”
 - Unit 5: “Entomology” (p. 25 vegetable insect pests)
 - Unit 6: “Plant Pathology”
 - Unit 7: “Weeds & Pest Management”
 - Others: Soils, Composting, etc.



Course materials

- **UW-Extension Publications**
 - Vegetables section from *Handbook for WI Gardeners*
 - Plus:
 - “Weed Seedlings for the NC States” (NCR607)
 - “Home Grown Tomatoes: (A1691)
 - “Tomato Physiological Disorders” (A3798)
 - “Tomato Post-Harvest Disorders” (A3799)
 - “Spring/Summer/Fall Vegetables” (new series)



Course materials

- **WI Garden Factsheets (XHT series)**
 - “Using Manure in the Garden” (XHT 1143)
 - “Using Produce from Flooded Gardens” (XHT1187)
 - “Extending the Season” (XHT1158)
 - Plus:
 - List of XHT Factsheets on vegetable pests

Course materials

- Articles from WI MG Program Website: (<http://wimastergardener.org>)
 - "Floating Row Covers"
 - "Heirloom Vegetables"
 - "Refresh Your Vegetable Garden for a Fall Crop"
- Articles from WIMGA Newsletters:
 - "Saving Garden Seeds"

Course materials

- Miscellaneous
 - "Spring & Late Vegetable Planting Schedule"
 - "Thermo Classification of Vegetables"
 - "Median Frost Dates"
 - "All-America Selections: Vegetables"
 - "Tomato Diseases" (Morrisey, 2010)
 - "A Review of Beneficial Insects" (from 10/22/10 Brown Bag Teleconference program)

Vegetable gardening references

- "Vegetable Gardening in the Midwest"
 - by Voight and Vandermark (IL Cooperative Extension)
- "The Midwest Fruit & Vegetable Book"
 - by Jim Fizzell (former IL Extension agent in Chgo.)
- "Homegrown Harvest"
 - American Horticultural Society (new Nov. 2010)

Enough about class...

.....what about YOU!

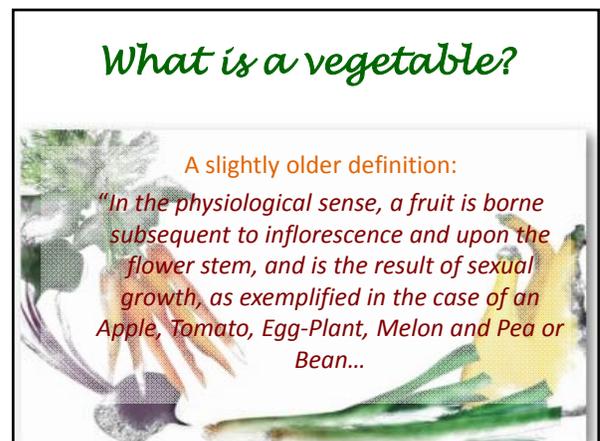
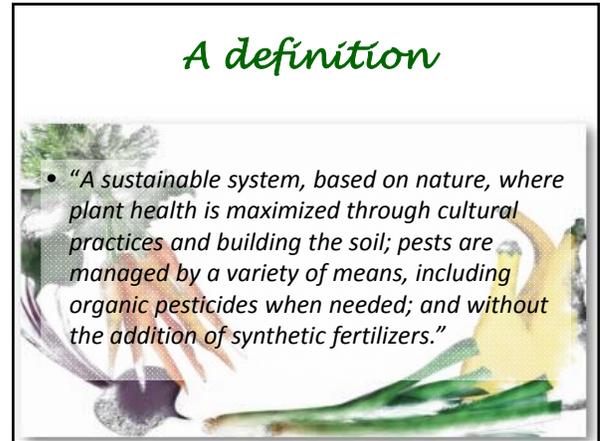


Why grow your own?

EatTheView.org

Why grow your own?

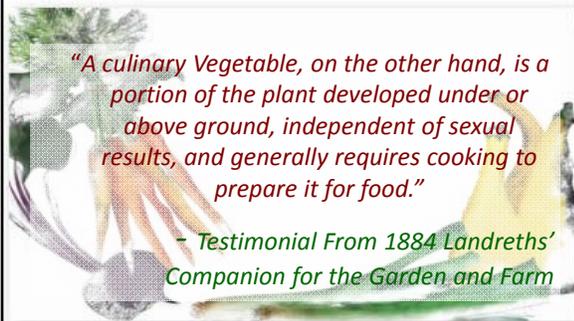
- Food safety (pesticide free)
- Enjoy gardening
- Satisfying
- Cheaper
- To share with others
- To sell
- Get varieties you can't buy elsewhere
- Teach children or grandchildren



What is a vegetable?

"A culinary Vegetable, on the other hand, is a portion of the plant developed under or above ground, independent of sexual results, and generally requires cooking to prepare it for food."

- Testimonial From 1884 Landreth's Companion for the Garden and Farm



Is a tomato a fruit or a vegetable?

Yes!

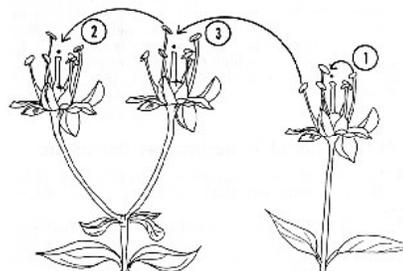


What plant parts are vegetables?

- ✓ Leaves
- ✓ Stems
- ✓ Roots
- ✓ Reproductive parts:
flowers, fruits, seeds

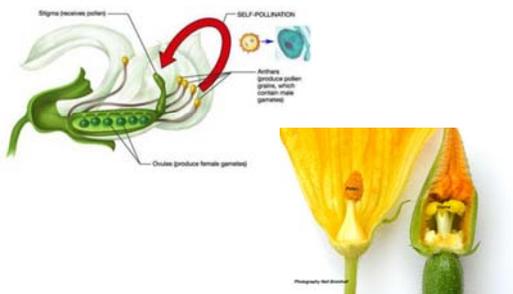


Pollination



1. Three methods of pollen transfer—(1) self-pollination; (2) pollen from same plant but different flower; (3) pollen from different plant.

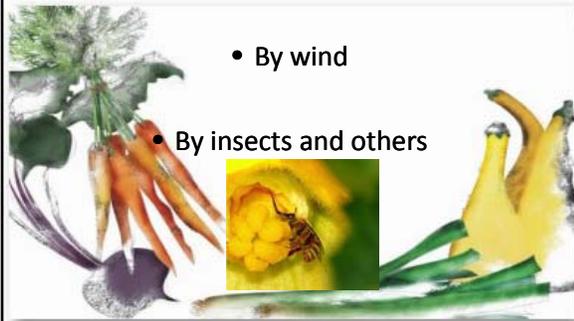
Pollination



Pollination

- Self-pollination
 - Tomatoes, peppers, eggplants
 - Cucumbers, squashes, melons
- Cross – required or helpful
 - Same variety but different plant required (corn)
 - Same or different varieties
 - If different then resulting seed will produce plants different from parents
 - Specific different variety required (pollinizer)

How?



- By wind
- By insects and others

Wind pollination

- Corn in blocks (different plants needed)



- Tomatoes, peppers, eggplants



Pollinators

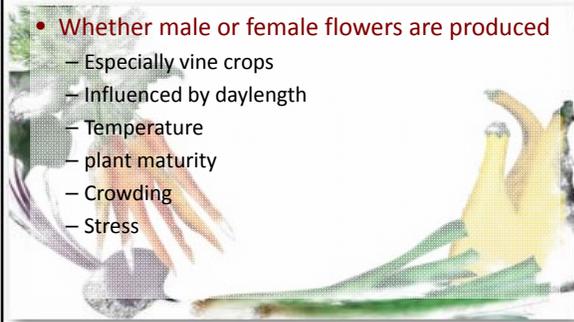


Effects on pollinators



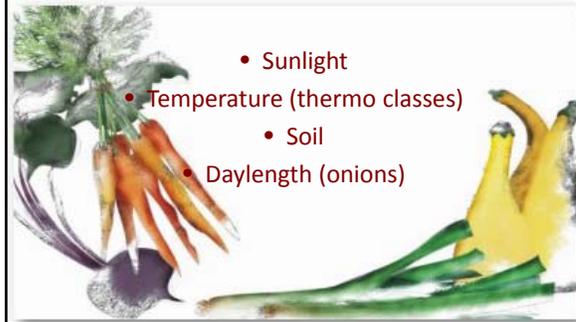
- Temperature,
 - wind,
 - rain,
- time of day,
- pesticides

Effects on pollination



- Whether male or female flowers are produced
 - Especially vine crops
 - Influenced by daylength
 - Temperature
 - plant maturity
 - Crowding
 - Stress

Physical requirements of vegetables



- Sunlight
- Temperature (thermo classes)
 - Soil
- Daylength (onions)

Planning the garden



Site requirements



Preparing the site

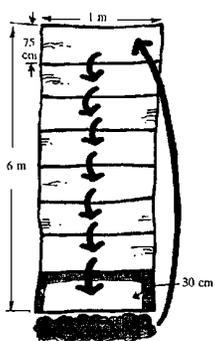
- Kill or remove the "sod"



- Work the soil



- Double digging



Preparing raised beds



Deciding what to grow

- **Purpose**

- Food for family
- Food to donate
- Supplement purchased produce
- Unusual varieties
- Health
- Teaching



Choosing varieties

- Flavor, use, appearance
- Mature size
- Days to harvest
- Disease resistance
- Growth characteristics
 - Determinate/ indeterminate
 - Vine or bush type



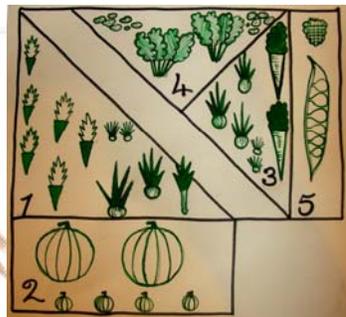
Choosing varieties

- All-America Selections (AAS)
- Heirlooms
- Seed saving
- Availability
 - Starting from seed
 - Purchasing



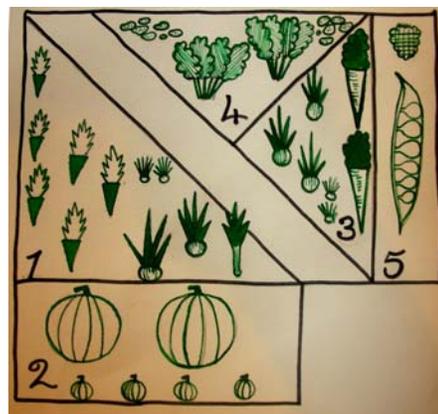
Planning the garden

- **Garden layout**
 - Crop groups/families
 - Rotation



Crop rotation

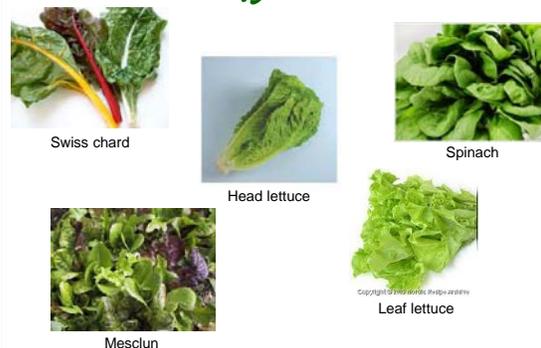
- **Moving groups of crops** to different locations in the garden every year on a 3 – 4 year cycle.
 - Largely for pest management



Crop Groups



Leafy Greens



Root Crops



Cole Crops

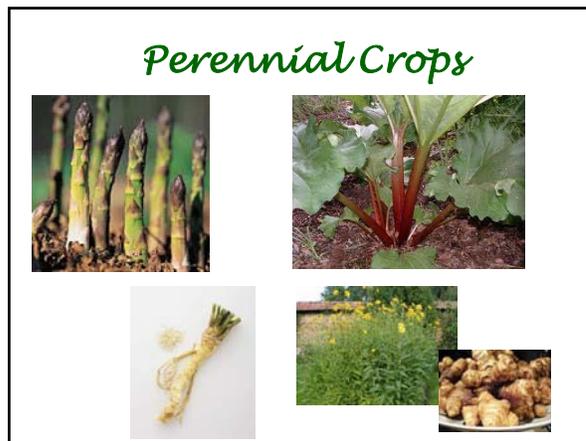


Legumes



Vine Crops





Layout

- 1) Perennial crops
- 2) Rotation of annual crops

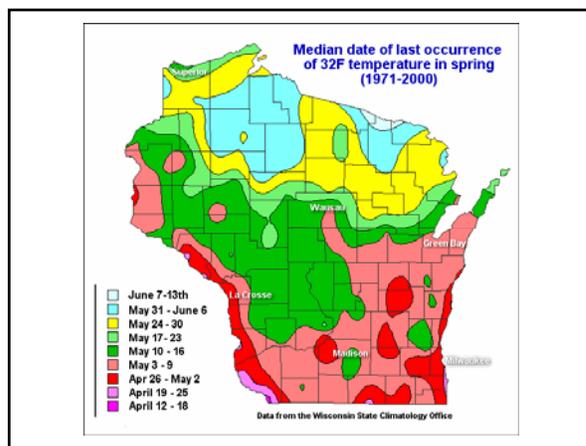
- Consider:
 - Exposure
 - Back of garden is north
 - Tall crops to the back
 - Row orientation – north to south
 - Space needed and spacing of plants

The diagram shows a top-down view of a garden layout with various plants arranged in rows. A background image shows a garden with tall plants and a purple flower.

When to plant what

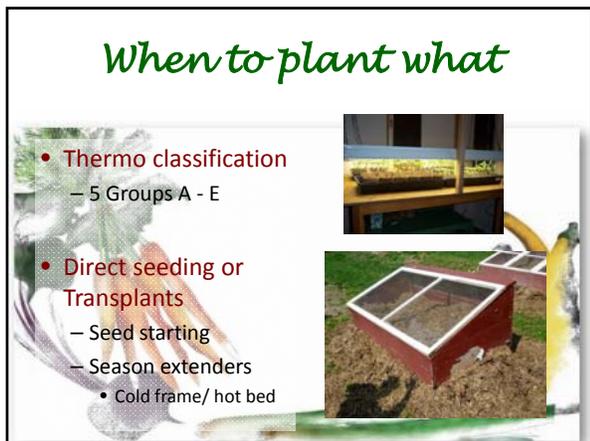
- **Timing is everything!**
 - Frost free dates
 - Thermo classification
 - 5 Groups A - E
 - Direct seeding or Transplants

The background image shows a variety of fresh vegetables including carrots, green onions, and a purple flower.



When to plant what

- **Thermo classification**
 - 5 Groups A - E
- **Direct seeding or Transplants**
 - Seed starting
 - Season extenders
 - Cold frame/ hot bed



Sequential planting

- Planting small amounts of the same crop every week or two to spread out the harvest.
- Planting a different second crop in an area vacated by an early, fast growing crop that has been harvested and removed.



Interplanting

- Planting small, fast to mature crops between transplants of another longer season crop that gradually increases in size. The faster crop will be finished before the longer one gets large enough to need the space.




Late Planting

- Planting (again) in mid-season those early season crops that prefer cool temperatures when they are mature and producing in the fall.

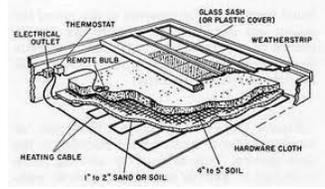


Season extenders

- Cold frames and hot beds
- Floating row covers
 - Plastic films
 - Soil mounds
- Individual plant covers
 - Cloches
 - Walls 'o water



Cold frames & Hot beds



Floating Row Covers



Plastic films



Soil mounds (raised beds)





Individual plant covers



Production & management

Culture of vegetable crops

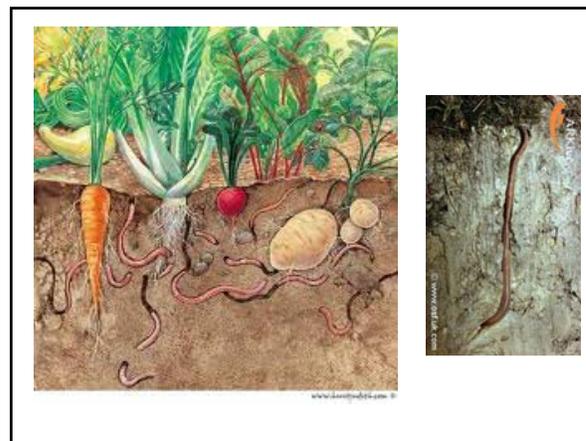
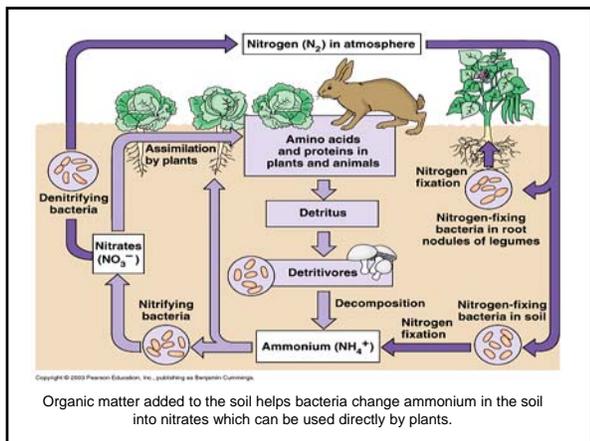
- Planting
- Watering
- Mulching
- Harvest
- Storing
- Pest management

Organic gardening concepts

Soils
Plants
Fertilizers
Gardening products
Pest management & pesticides

Organic Gardening: Soil management

- 2 main concepts:
 - Build the soil
 - Compost wastes



Organic Gardening: Plants

- Select varieties adapted to your area
- Choose disease resistant varieties
- Provide good cultural care

Organic gardening: Fertilizers

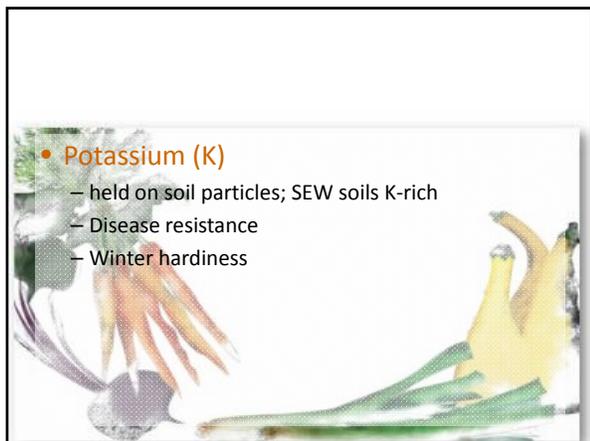
- Nutrients plants need most from fertilizers:

N-P-K
(Nitrogen-Phosphorus-Potassium)

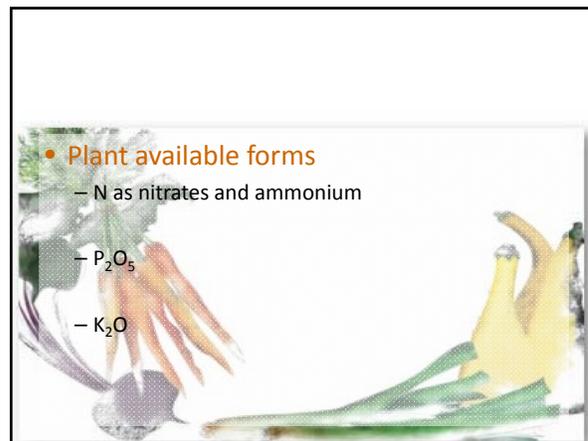
- **Nitrogen**
 - water soluble/ leaches
 - Vegetative, green leafy growth

- **Phosphorus**
 - held on soil particles; SEW soils P-rich
 - Ban only for lawns
 - Root development
 - Starter fertilizers for transplants
 - Flower development

- **Potassium (K)**
 - held on soil particles; SEW soils K-rich
 - Disease resistance
 - Winter hardiness



- **Plant available forms**
 - N as nitrates and ammonium
 - P_2O_5
 - K_2O

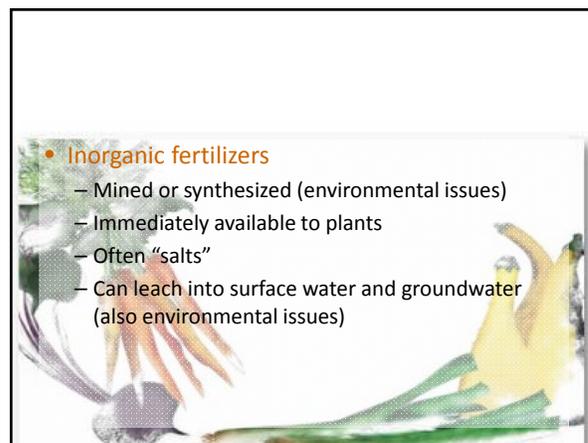


- **Organic fertilizers**
 - From “organisms”
 - Manures
 - plant wastes (compost)
 - fish emulsion

Never use fresh manure on vegetables (unless you're sure you are doing it safely!)

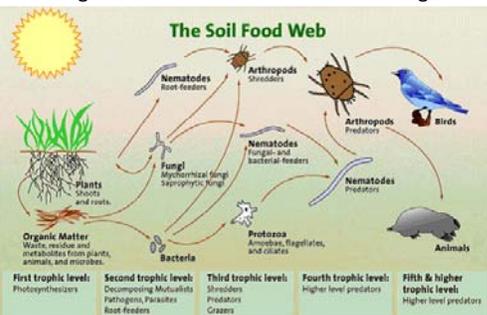


- **Inorganic fertilizers**
 - Mined or synthesized (environmental issues)
 - Immediately available to plants
 - Often “salts”
 - Can leach into surface water and groundwater (also environmental issues)



- **Plants don't care but the soil does!**

Adds organic matter and benefits soil microorganisms



The Soil Food Web

First trophic level: Photoautotrophs (Plants, algae, cyanobacteria)

Second trophic level: Decomposers, Mutualists, Pathogens, Parasites, Root feeders (Fungi, Bacteria, Nematodes)

Third trophic level: Shredders, Predators, Grazers (Nematodes, Protozoa, Arthropods)

Fourth trophic level: Higher level predators (Nematodes, Arthropods, Birds)

Fifth & higher trophic level: Higher level predators (Animals)

Organic gardening: Product selection

- **Sustainability & environmental impacts**
 - Renewable
 - Recyclable
 - Environmental impacts of production
 - Environmental impacts of using
 - Human impacts of production and sale
 - Carbon footprint



For example: Coir

- **Peat moss substitute**

- Peat is not renewable; coir is
- Coir is the fibers from the outside of coconut shells
- By-product of the coconut industry
- More absorbent than peat
- Wets faster
- Compresses into smaller volume



Organic gardening: pest management

- Integrated Pest Management
- Organic pesticides

Will be discussed in Session #4

Production & management

Culture of vegetable crops

- Planting
- Watering
- Mulching
- Harvest
- Post harvest care/ storing
- Pest management

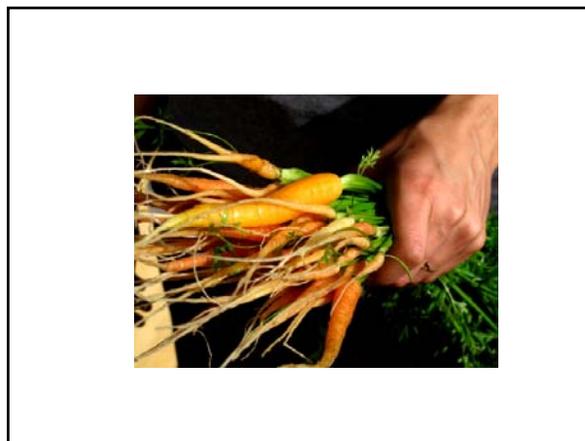
Planting

- **Seeds**

- Follow seed packet directions
- Thinning later is critical

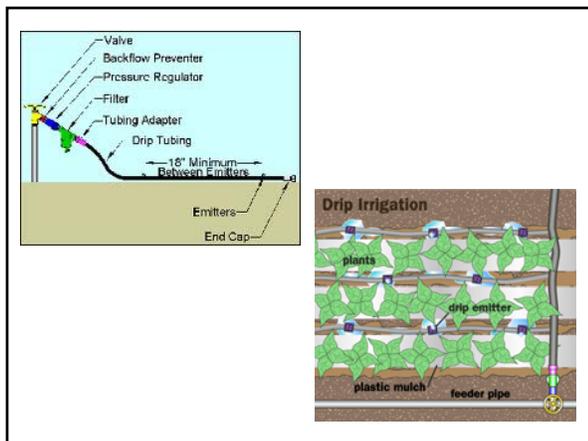
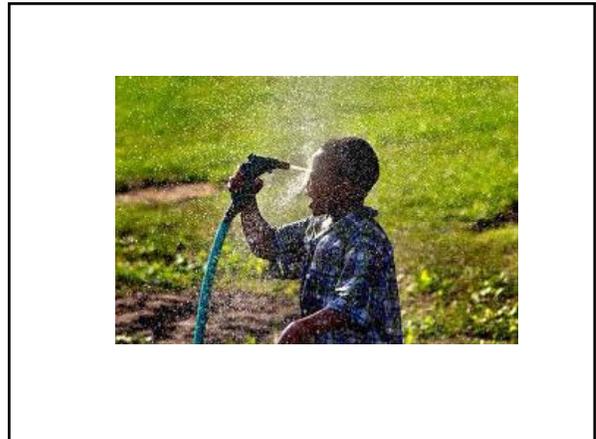
- **Transplants**

- Final spacing
- Same depth or a little deeper
 - Tomatoes a lot deeper



Watering

- Avoid overhead watering
- If overhead watering, then water early in the day



Mulching

- Organic mulches

Mulching

- Inorganic mulches

- Carpet as mulch

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Harvesting

- At proper stage of maturity
- Early in the day while cool
- After foliage has dried
- Remove any unnecessary plant parts (carrot tops)
- Brush off dirt
- Wash (except lettuce)
- Keep cool to stop respiration

Storing

- Immediate post-harvest care - either:
 - a) Cure in a warm, dry place to "seal"
 - Onions, potatoes, winter squash

Storing

- Or put directly into storage conditions
 - a) Cold (33 degrees) with high humidity (90 – 95%)
 - Most vegetables
 - Ventilated plastic bags
 - b) Cool (40 – 60) with high humidity (90 – 95%)
 - Sweet peppers, potatoes, sweet potatoes, tomatoes
 - Ventilated plastic bags (potatoes in sand!)
 - c) Cold with low humidity (65 – 70%)
 - Dry beans, onions, hot peppers, winter squash



Next 2 Weeks

- Vegetable crops
 - By rotational group
 - By time of planting
- Bring:
 - Unit 5; pp. 18 – 45
 - (Community Partners: "Grow Your Own Vegetables" pp. 18 – 45)

