Why a Vegetable Garden

- Special satisfaction
- Outdoor exercise
- Homegrown great flavor
- Sharing
- High quality nutrition
- Eat less processed foods
- Food budget savings
Eating your Veggies: Not as good for you?

- Time Magazine-Journal of Hortscience; February 2009
- Apparently produce in the U. S. not only taste worse than it did in your grandparents days, it also contains fewer nutrients—at least according to Donald R. Davis, a former research associate with the Biochemical Institute at the University of Texas, Austin. Davis claims the average vegetable found in today’s supermarket is anywhere from 5% to 40% lower in minerals than those harvested just 50 years ago
Increasing Health Benefits in Vegetables

• Cancer-fighting phytonutrients are part of a plant’s own system to fend off disease and insects.
• Plant produces more of these natural chemicals when it’s under stress—Extension horticulturist Vince Fritz.
• Strategies for increasing phytonutrients in your produce may include different planting dates, soil fertility, plant spacing, light quality and water.

http://www.extension.umn.edu/source/
Garden Soil

- Organic matter keeps the soil loose and healthy
- It acts like a “sponge” to hold water, fresh air, and plant food
- Add compost, rotted manure or fertilizer in the fall
# Healthy Soils, Healthy Plants, Healthy People

## Maintaining Soil Fertility:

- Cultural practices that support the development of *healthy, vigorous root systems* result in efficient uptake and use of available nutrients.

## Cultural practices that help accomplish these goals:

- *Soil testing*
- *Crop rotations*
- Reducing *tillage*
- Growing *cover crops*
- *Manure* as a valuable nutrient source
- *Composting*
- Applying supplemental *fertilizers*
Vegetable Planting Strategies

• Sunny well drained location
• Avoid frost pockets
• Close to house
• South facing slopes are warmer
• Protect from wind
Vegetable Planting Strategies

- Space Considerations
- Perennial weeds
- Don’t plant too close to trees and shrubs
- Close to water
Don’t Work the Garden when it’s Wet

- Ruin the structure of the soil—bad for plant roots
- Fall tilling—early spring planting
- Spring—determine if soil is dry enough
- Squeeze soil into a ball
- Hand dig or rotary tiller
- Avoid walking over wet garden
Don’t Plant a Garden in a Soggy, Low Spot

- Soil that is constantly waterlogged may have a layer of hardpan
- Soil stays cold in low wet areas
- Excess moisture and nowhere for roots to grow
- No room for air when water fills all the spaces
Don’t Sow Seeds to Thick

• “Less is more”
• Problem—empty a whole packet of seeds in a small space
• Develop tall, weak stems that never recover
• Most vegetable seeds need proper spacing
• Directions on package
• Mix with sand or coffee grounds to space them out
• Sow by hand
Sowing Seeds

• For small seeds make a planting furrow with tip of hoe
• Water furrow prior to sowing
• Tap the open envelope as you move down the row
• Cover the seed with moist soil and tamp with back end of steel-toothed rake
• Important—seed to soil contact
• No need for any further watering
Proper Depth of Seeds

- Seeds have everything they need to grow, except moisture and heat
- Pile too much soil on them and they are overwhelmed
- General rule for depth – cover to a depth no more than 3 times their size, or
  - Small seeds: $\frac{1}{4}$ to $\frac{1}{2}$ inch
  - Medium seeds: $\frac{1}{2}$ to 1 inch
  - Large seeds: 1 to 2 inches
Mulching

- Don’t mulch heat-loving plants too early in the season
- Mulch smoothers weeds and conserves soil moisture but doesn’t allow soil to warm up
- Cantaloupes, sweet potatoes, watermelons, tomatoes, peppers, and okra-mulch in early July, no earlier
Watering

• Never lightly sprinkle water on the top
• First two weeks of growth water is important to build good root systems
• Water thoroughly each week so the soil is soaked
Growing Cole Crops

Producing quality cauliflower, cabbage and broccoli in Minnesota is challenging

1. Grow recommended varieties
2. Study available production information and improving cultural practices
3. Knowing the production requirements and the response of broccoli, cabbage and cauliflower cultivars to our local growing conditions is essential in producing a consistently high quality product.
Nutritional Value

• Brassica vegetables are highly regarded for their nutritional value
• They provide high amounts of vitamin C and soluble fiber
• Contain multiple nutrients with potent anticancer properties
• Boiling reduces the level of anticancer compounds, but steaming, microwaving, and stir frying do not result in significant loss
• Steaming the vegetables for three to four minutes is recommended to maximize effect
Climatic and Planting Requirements

Weather is one of the most limiting factors:

- Broccoli, cabbage and cauliflower perform best with cool daytime temperatures
- Do not tolerate frost in the early seedling stage of growth (before the plant has three or four pairs of true leaves)
- Start seed indoors in early April or 4-6 weeks before transplanting
- Planting date is normally early May for a summer crop
- Fall season plantings should be made in early July
Climatic Requirements

- Hot weather causes broccoli to bolt and cauliflower curds to develop a red-purple discoloration.
- Cauliflower tend to bolt if exposed to night temperatures over a week below 50 degrees.
- Broccoli, cabbage and cauliflower will tolerate some frost and freezing conditions to near 20°F late in plant development.
Insect Problems

- Flea beetles - chew holes in leaves
- Cabbage loopers - feed on leaves
- Cabbage maggots - feed on roots
Cabbage Loopers Control

- Bacillus thuringiensis (Bt), a non-toxic, biological insecticide, is effective and is specifically targeted towards worms/caterpillars
- Safe and can be used on most vegetables
- Bt will not harm any beneficial insects, including natural enemies
- Must be ingested to kill-good coverage is essential
Suggested Broccoli Varieties

» Days to Maturity from transplant

- Munchkin-28
- Early Dividend-43
- Bonanza-50
- Packman-65
- Premium Crop-82
- Arcadia-86
Suggested Cabbage Varieties

- Polar Green-56
- Early Jersey Wakefield-65
- Dynamo-65
- Stonehead-67
- Market Topper-73
- Green Boy-75
- Stonehold-77
- Copenheaven-80
- Discovery-80
- Fortuna-82

Days to Maturity from transplant
Suggested Cauliflower Varieties

- Silver Cup - 40 days
- Snow Crown - 48 days
- Fremont - 65 days
- Andes - 67 days
- White Sails - 68 days
- Candid Charm - 75 days
- Stardust - 80 days
Harvesting Broccoli

- Harvest before flower buds open
- Broccoli can produce heads for several weeks
- After central broccoli head has been removed you will get additional side heads
Tying up Cauliflower
Cauliflower Harvest

- Tying up loose leaves will keep the heads white colored or blanched
- Self-blanching varieties available that don’t require leaves to be tied
- If curds are left on the plant for too long they will become loose or ricey
Harvesting Cabbage

- Harvest when heads reach a usable size
- Cut head off above the outer leaves
- Heads can split if left on the plant too long
- Minimize splitting by twisting head a quarter turn or shearing one side of roots to reduce water flow
Growing Leafy Greens

• Three types of Lettuce: Looseleaf, head or romaine and Boston or bibb
• Spinach leaves can be smooth or ruffled depending on variety
• Leaf lettuce grows quickly and is the easiest to grow
• Cool weather vegetable and grow best at 60-65 degrees
• They go dormant in hot weather
Nutrition in Leafy Vegetables

**#5 Spinach:** Popeye's favorite vegetable
- 20 calories per serving
- Packed with vitamins A and C, as well as folate
- Cooked spinach gives you more nutrition than raw

**#8 Leaf and Romaine Lettuce:**
- High in vitamin A and offer some folate.
- The darker the lettuce leaf, the more nutrition it has-red leaf slightly healthier than green.
- If you don't drown lettuce in a creamy dressing, one cup contains 10 calories.

**#10 Iceberg lettuce**
- Mostly water
- It's the country's most popular leafy green
- Each of us eats about 17 pounds a year
Planting Greens

• Direct seed as soon as ground can be worked
• For fall crop sow seed in early July
• Plant seeds 1/4-1/2” deep in rows 18-30” apart
• Once germinated thin lettuce to 8-12” apart
• Thin spinach to 2-4” apart
Insects

Flea Beetles

• Little black “jumping” insects the size of a head of a pin that chew holes in leaves, can be a problem with leafy greens
Harvesting

- Harvest leaf lettuce and spinach as soon as the leaves become large enough to use.
- By removing only the outer leaves, the plant will continue to produce for a long time.
## Suggested Varieties

<table>
<thead>
<tr>
<th>Spinach</th>
<th>Days to Maturity from Transplant</th>
<th>Leaf Lettuce</th>
<th>Days to maturity from Transplant</th>
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<tbody>
<tr>
<td>• Indian Summer</td>
<td>30</td>
<td>• Oak Leaf</td>
<td>45</td>
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<tr>
<td>• Tyee</td>
<td>39</td>
<td>• Grand Rapids</td>
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<tr>
<td>• Bloomsdale Longstanding</td>
<td>42</td>
<td>• Black Seeded Simpson</td>
<td>48</td>
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<tr>
<td>• Correnta</td>
<td>45</td>
<td>• Red Sails</td>
<td>48</td>
</tr>
</tbody>
</table>

- **Romaine Lettuce**
  - • Little Gem: 50
  - • Romulus: 50
  - • Cosmo: 60
Steven R. Poppe
University of Minnesota
West Central Research and Outreach Center
Horticulture Scientist
poppesr@morris.umn.edu
320-589-1711
http://wcroc.cfans.umn.edu