Vegetable Gardening Basics
By Sarah Browning, Nebraska Extension

Where should the garden be located?

Amending Soils
- Organic matter – yes
- Sand – no
- Lime – almost always no in Nebraska
- Gypsum – almost always no in Nebraska
- Changing pH – works for the short term; ongoing process
- Soil test for others

Raised Beds
- Amended soil used
- Less compaction
  - Compaction can reduce yields up to 50%
- Earlier planting
- Drip/soaker irrigation
- Eases pest control
- Increased yields / sq. ft.
  - Traditional = .6 lb’s / sq. ft.
  - Raised = 1.24 lb’s. / sq. ft.
- Doubles as cold frame

Create a Garden Rotation Plan

CropWatch Soil Temperature – https://go.unl.edu/soiltemp

Planting Outdoors:
Soil Temperature & Germination
- Optimum range
  - 5 to 10 degrees above minimum
  - 15 to 20 degrees below maximum
- Roots of transplants need minimum as well
- Faster germination at warmer soil temperatures

Transplants
- Good- broccoli, cabbage, cauliflower, eggplant, lettuce, sweet potato, onion, tomato and pepper
- Medium- celery, melon, cucumber, squash, watermelon
- Poor- bean, corn, pea, okra

Transplants
- 10 weeks: broccoli, cabbage, cauliflower
- 6-7 weeks: pepper, tomato and eggplant
- 2-3 weeks: cucumber, muskmelon, squash and watermelon
Check Seed Viability

- Sow seed more thickly to achieve the desired amount of plants.
- Germination Test
  - Place 10 seeds on a moist paper towel
  - Seal the bag, and in a warm location, 70-75 degrees
  - Check germination at 7-10 days

Planting Dates

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Transplant Into Garden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asparagus crowns, Collards, Onion sets, Parsnip, Pea, Radish, Spinach, Turnip</td>
<td>Feb. 26</td>
</tr>
<tr>
<td>Leek, Potato, Swiss Chard</td>
<td>March 8</td>
</tr>
<tr>
<td>Beet, Cabbage, Carrot, Lettuce</td>
<td>March 18</td>
</tr>
<tr>
<td>Broccoli, Brussels Sprouts, Cauliflower,</td>
<td>March 28</td>
</tr>
<tr>
<td>Sweet corn, Sweet potato, Tomato</td>
<td>April 17</td>
</tr>
<tr>
<td>Bean (bush, pole &amp; wax), Cucumber, Eggplant, Muskmelon, Pepper, Pumpkin,</td>
<td>April 27</td>
</tr>
<tr>
<td>Okra, Watermelon</td>
<td>May 7</td>
</tr>
<tr>
<td>Lima bean, Winter squash</td>
<td>May 17</td>
</tr>
</tbody>
</table>

Rooting Depths of Vegetables

<table>
<thead>
<tr>
<th>Shallow 12-18 inches</th>
<th>Moderate 18-24 inches</th>
<th>Deep 24 inches +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli</td>
<td>Bean</td>
<td>Asparagus</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Beet</td>
<td>Lima Bean</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>Carrot</td>
<td>Parsnip</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>Chard</td>
<td>Pumpkin</td>
</tr>
<tr>
<td>Corn</td>
<td>Cucumber</td>
<td>Winter Squash</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Eggplant</td>
<td>Sweet Potato</td>
</tr>
<tr>
<td>Onion, Garlic, Leek</td>
<td>Muskmelon</td>
<td>Tomato</td>
</tr>
<tr>
<td>Parsley</td>
<td>Pea</td>
<td>Watermelon</td>
</tr>
<tr>
<td>Potato</td>
<td>Pepper</td>
<td></td>
</tr>
<tr>
<td>Radish</td>
<td>Summer squash</td>
<td></td>
</tr>
<tr>
<td>Spinach</td>
<td>Turnip</td>
<td></td>
</tr>
</tbody>
</table>
Selection Criteria
- Days to harvest
- Disease & insect resistance
- Resistance to environmental problems
- Fruit color, flavor & texture
- Plant growth habit

Vegetable Selection
- NebGuides available, extensionpubs.unl.edu
  - "Selected Vegetable Varieties for Nebraska"
  - "Selecting Tomatoes for the Home Garden"
- Other Resources
  - Cornell University, vegvariety.cce.cornell.edu/
  - All American Selections, all-americanselections.org/

Cultivar vs. Variety
- Cultivated variety
- Group of plants with distinct characteristics
- Developed through human manipulation
  - Plant selection
  - Hybridization

Hybrid
- Variety resulting from the cross of two genetically uniform varieties to produce special characteristics
- F1 hybrid - first offspring, more vigorous
- Uniform characteristics, higher yields
- Usually do not breed true

Asparagus ‘Jersey Supreme’
- Hybrid, male cultivars
- Jersey Supreme is an early variety with medium sized spears
- Highest yield in Iowa State University trials (1995), followed by Jersey Giant and Jersey Knight
- Tolerant of fusarium crown rot and rust in colder climates
- Does well in heavy soils

‘County Fair’ Cucumber
- 52 days
- Pickling or slicing cucumber
- Predominantly female, mostly seedless if isolated from pollinators
- Bacterial wilt resistance
‘Diva’ Cucumber
- 58 days
- AAS 2002
- Smooth thin skin, burpless
- Gynoecious
- Parthenocarpic
- Good disease resistance
- Not attractive to cucumber beetles

Early blight, *Alternaria liniariae*
- Solarization
  - A non-chemical method to kill weed seed, insects and nematodes in the upper soil layers
- Clear plastic traps heat from the sun; use thin, 1-6 mil plastic
- Soil temperature must be maintained between 98-126°F for at least 3 months
- Moist soil increases the efficiency of kill

Management of Foliage Diseases
- Avoid Planting too Closely
- Use Mulch Beneath Plants
- Avoid Overhead Irrigation
- Use Resistant Varieties
- Buy Healthy Plant Material
- Practice good garden sanitation

General Guidelines for Chemical Pest Control
- Use the least toxic product that will give good control
  - Bacillus thurengiensis
  - Horticultural oils
  - Insecticidal soaps
  - Pyrethrins
  - Copper fungicide
- Begin a preventative fungal spray program at first sign of disease
- Fungicides are protective, not curative
- Every 7-14 days
- Thorough plant coverage with the insecticide is essential
- Higher water volumes help increase coverage
- Use wetting agents or spreader/stickers if needed
Environmental Problems: Blossom End Rot
- Calcium deficiency
- Maintain an even moisture supply
- Mulch to conserve soil moisture and reduce disease
- Avoid root injury
- Mechanical
- Disease
- Avoid excessive Nitrogen

Environmental Problems: Sun Scald
- Poor leaf canopy for developing fruits
- Control foliage diseases
- Resistant varieties
- Spray program
- Selectively harvest and prune to minimize fruit exposure to direct sunlight

Environmental Problems: Fruit Cracking

Questions?
Sarah Browning
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Phone: (402) 441-7180
<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Earliest Planting</th>
<th>¹Suggested Planting Dates</th>
<th>Tolerance of Frost</th>
<th>³Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bean, Snap bush</td>
<td>Apr-26</td>
<td>May 10-June 10</td>
<td>May 20-June 20</td>
<td>Poor</td>
</tr>
<tr>
<td>Beet</td>
<td>Apr-14</td>
<td>Apr 1-May 10</td>
<td>May 20-June 20</td>
<td>Medium</td>
</tr>
<tr>
<td>*Broccoli</td>
<td>Apr-5</td>
<td>Apr 10-May 10</td>
<td>June 10-July 10</td>
<td>Good</td>
</tr>
<tr>
<td>*Cabbage</td>
<td>Apr-5</td>
<td>Apr 1-May 10</td>
<td>June 1-July 1</td>
<td>Good</td>
</tr>
<tr>
<td>Carrot</td>
<td>Apr-5</td>
<td>Apr 1-May 10</td>
<td>June 20-Aug 1</td>
<td>Good</td>
</tr>
<tr>
<td>*Cauliflower</td>
<td>Apr-5</td>
<td>Apr 1-May 10</td>
<td>July 1-Aug 1</td>
<td>Good</td>
</tr>
<tr>
<td>Chard, Swiss</td>
<td>Apr-14</td>
<td>Apr 1-May 20</td>
<td>June 20-Aug 1</td>
<td>Fair</td>
</tr>
<tr>
<td>Cucumber</td>
<td>May-9</td>
<td>May 10-June 1</td>
<td>June 20-July 20</td>
<td>Poor</td>
</tr>
<tr>
<td>Eggplant</td>
<td>May-9</td>
<td>May 10-June 1</td>
<td>June 20-July 20</td>
<td>Poor</td>
</tr>
<tr>
<td>*Kohlrabi</td>
<td>Apr-5</td>
<td>Apr 1-May 20</td>
<td>July 1-Aug 10</td>
<td>Good</td>
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<tr>
<td>Lettuce, butterhead</td>
<td>Mar-29</td>
<td>Mar 1-May 1</td>
<td>July 20-Aug 10</td>
<td>V. Good</td>
</tr>
<tr>
<td>Lettuce, leaf</td>
<td>Mar-24</td>
<td>Apr 1-May 2</td>
<td>July 20-Aug 20</td>
<td>V. Good</td>
</tr>
<tr>
<td>Muskmelon, (cantaloupe)</td>
<td>May-9</td>
<td>May 10-June 1</td>
<td>June 20-July 20</td>
<td>Poor</td>
</tr>
<tr>
<td>Onion set, dry</td>
<td>Mar-24</td>
<td>Mar 10-June 1</td>
<td>July 20-Aug 20</td>
<td>Poor</td>
</tr>
<tr>
<td>Onion, green</td>
<td>Mar-24</td>
<td>May 10-June 1</td>
<td>July 20-Aug 20</td>
<td>V. Good</td>
</tr>
<tr>
<td>Pea</td>
<td>Mar-28</td>
<td>Mar 10-Apr 20</td>
<td>July 1-Aug 1</td>
<td>Medium</td>
</tr>
<tr>
<td>*Pepper</td>
<td>May-9</td>
<td>May 10-June 1</td>
<td>July 20-Aug 10</td>
<td>Poor</td>
</tr>
<tr>
<td>Potato</td>
<td>Apr-5</td>
<td>Mar 20-Apr 20</td>
<td>June 20-July 10</td>
<td>Poor</td>
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<tr>
<td>Pumpkin</td>
<td>May-9</td>
<td>May 10-June 10</td>
<td>July 20-Aug 10</td>
<td>Poor</td>
</tr>
<tr>
<td>Radish</td>
<td>Mar-28</td>
<td>Mar 10-May 20</td>
<td>Aug 10-Sep 10</td>
<td>Medium</td>
</tr>
<tr>
<td>Spinach</td>
<td>Mar-24</td>
<td>Mar 10-Apr 20</td>
<td>July 10-Aug 20</td>
<td>V. Good</td>
</tr>
<tr>
<td>Squash, summer</td>
<td>May-9</td>
<td>May 10-July 1</td>
<td>July 10-Aug 20</td>
<td>Poor</td>
</tr>
<tr>
<td>Squash, winter</td>
<td>May-9</td>
<td>May 20-June 20</td>
<td>July 10-Aug 20</td>
<td>Poor</td>
</tr>
<tr>
<td>Sweet Corn</td>
<td>Apr-25</td>
<td>May 1-July 1</td>
<td>May 10-July 1</td>
<td>Poor</td>
</tr>
<tr>
<td>*Sweet potato-transplant</td>
<td>May-10</td>
<td>May 20-June 1</td>
<td>May 10-June 10</td>
<td>V. Poor</td>
</tr>
<tr>
<td>*Tomato</td>
<td>May-1</td>
<td>May 10-June 1</td>
<td>May 10-June 10</td>
<td>Poor</td>
</tr>
<tr>
<td>Watermelon</td>
<td>May-10</td>
<td>May 20-June 1</td>
<td>May 10-June 1</td>
<td>V. Poor</td>
</tr>
</tbody>
</table>

Average date of last spring 32°F is April 22.
Average date of first fall 32°F is October 10.

¹ Adjust Actual earliest planting dates based on current weather conditions and forecasts.
² For crops that mature well in cool, autumn weather. See the following section, "Fall Gardening."
³ The actual number of days to harvest will depend on the variety grown and the growing conditions.
* It is recommended that in spring, gardeners use transplants, rather than direct seeding, of these crops. For fall crops, though, direct seeding in the garden is recommended for most crops. At that time the soil is warm and seedlings will emerge and grow quickly.