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

Amaranth
- Beet, Spinach, Swiss chard

Aster
- Artichoke, Endive, Lettuce, Sunflower

Brassica
- Broccoli, Brussels sprouts, Cabbage, Cauliflower, Radish

Carrot
- Celery, Cilantro, Dill, Fennel, Parsnip

Cucumber
- Cucumber, Gourd, Melon, Pumpkin, Squash, Watermelon

Grass
- Sweet corn

Legume
- Beans, Cowpeas, Peas, Peanuts

Onion
- Chives, Garlic, Leeks

Tomato
- Eggplant, Pepper, Potato, Tomatillo
CropWatch Soil Temperature

Weekly Average 4-inch Bare Soil Temperature (°F)
Tue, 2023-02-28

Ga.unl.edu/soiltemp
<table>
<thead>
<tr>
<th>35 Degrees Fahrenheit</th>
<th>40 Degrees Fahrenheit</th>
<th>50 Degrees Fahrenheit</th>
<th>60 Degrees Fahrenheit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinach</td>
<td>Turnip</td>
<td>Asparagus</td>
<td>Bean</td>
</tr>
<tr>
<td>Parsnip</td>
<td>Radish</td>
<td>Corn</td>
<td>Lima Bean</td>
</tr>
<tr>
<td>Onion</td>
<td>Pea</td>
<td>Chard</td>
<td>Cucumber</td>
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<tr>
<td>Lettuce</td>
<td>Parsley</td>
<td>Celery</td>
<td>Eggplant</td>
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<tr>
<td></td>
<td>Chard</td>
<td>Cauliflower</td>
<td>Muskmelon</td>
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<tr>
<td></td>
<td>Celery</td>
<td>Carrot</td>
<td>Okra</td>
</tr>
<tr>
<td></td>
<td>Cauliflower</td>
<td>Cabbage</td>
<td>Pepper</td>
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<tr>
<td></td>
<td>Carrot</td>
<td>Beet</td>
<td>Pumpkin</td>
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<tr>
<td></td>
<td>Cabbage</td>
<td></td>
<td>Squash</td>
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<tr>
<td></td>
<td>Beet</td>
<td></td>
<td>Watermelon</td>
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</tbody>
</table>
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
Planting Outdoors: Soil Temperature & Germination

- Carrot germination
  - 0 germination at 32 degrees F.
  - 51 days to germinate at 41 degrees F.
  - 17 days at 50 degrees
  - 6 days at 68 to 86 degrees
  - No germination at 104 degrees
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
<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>
Watering
# Rooting Depths of Vegetables

<table>
<thead>
<tr>
<th>Shallow</th>
<th>Moderate</th>
<th>Deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-18 inches</td>
<td>18-24 inches</td>
<td>24 inches +</td>
</tr>
</tbody>
</table>

- Broccoli
- Cabbage
- Brussels Sprouts
- Cauliflower
- Corn
- Lettuce
- Onion, Garlic, Leek
- Parsley
- Potato
- Radish
- Spinach
- Bean
- Beet
- Carrot
- Chard
- Cucumber
- Eggplant
- Muskmelon
- Pea
- Pepper
- Summer squash
- Turnip
- Asparagus
- Lima Bean
- Parsnip
- Pumpkin
- Winter Squash
- Sweet Potato
- Tomato
- Watermelon

Knott’s Vegetable Handbook
Vegetable Selection

2023 All-America Selection Winner

‘Zenzei’ Tomato
Selection Criteria

- Days to harvest
- Disease & insect resistance
- Resistance to environmental problems
- Fruit color, flavor & texture
- Plant growth habit

‘Early Girl’, Park Seed
www.parkseed.com
Vegetable Selection

- New NebGuides available
  - “Selected Vegetable Varieties for Nebraska”
  - “Selecting Tomatoes for the Home Garden”
    [extensionpubs.unl.edu](http://extensionpubs.unl.edu)

- Other Resources
  - Cornell University
    [vegvariety.cce.cornell.edu/](http://vegvariety.cce.cornell.edu/)
  - All American Selections
    [all-americaselections.org/](http://all-americaselections.org/)
Cultivar vs. Variety

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

Striped German tomato
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
Vegetable Pest Control

Early blight, *Alternaria linariae*
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
Disease System Components

Environment

Susceptible Host

Pathogen

Disease Occurs
Management of Foliage Diseases

- Use a 3-4 year garden rotation schedule
- Do Rotations Matter Within Disease Management Programs?

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 Problem
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

- Use tolerant varieties
  - Resistant - Celebrity, Jackpot, Mountain Fresh, Rutgers, Supersonic.

- Proper irrigation and nutritional management
  - Periods of slow fruit growth followed by fast fruit growth
  - Heavy periods of rain following dry conditions

- Mulch

- After harvest, do not immerse fruits in water to clean
Check Out:

GRO Big Red Virtual Learning, Go.unl.edu/grobigredtube


Extension Publications, Extensionpubs.unl.edu

Questions?

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