

Vegetable Garden Basics

Written by: Maggie Moor-Orth, Carrie Murphy, and Tracy Wootten

Date: February 2025

Prepare the seedbed/soil

Preparation:

- Do not work the soil if it is too wet. If it sticks to your shoes, it's too wet.
- If it rolls into a snake, it's too wet.



A gardener planting lettuce in soil.

To Test:

Press a small amount of soil in your palm, if it crumbles and breaks into small clumps, it has the right moisture. Till the garden soil with a rotary tiller (for larger sites) or shovel or pitchfork (for smaller sites); be sure to break up the shovel slices and large clumps. If installing raised beds, do the same and then mound or fill constructs with good soil.

- Remove sticks and stones and rake the planting area to create a smooth, level seed bed.
- Don't walk excessively over the garden; it will compact your soil.

- Incorporate organic material and soil amendments according to soil sample results (if possible, two - to six months before planting). You can purchase soil tests at your local Extension offices.



Seeds spread on top of the soil.

Start the garden

- Plan and put your garden on paper first and record any planting changes.
- Find out the space requirement for individual crops.
- To break disease and insect cycles, if space permits, don't put crops of the same family (for example, tomatoes, peppers, potatoes and eggplant are all in the Solanaceous/Nightshade family) in the same spot more than once in three years.
- If this is not your first time gardening in this spot, use last year's garden plan as a guide to where to plant this year's crops.

- Find out which crops are grown best as direct seeding (can put the seeds directly in the garden) or must be started indoors and then transplanted out into the garden.
- Read garden plant/seed catalogs, books, Extension publications, and reliable websites to learn more about the crops you are growing.
- Place seed orders early if ordering from a catalog-typically the fall before.
- Construct raised beds (cypress or cedar wood, concrete blocks, bricks, raised bed kits) and fill them with soil high in organic matter that drains well. Or simply mound the soil to raise the beds and improve drainage.

Plant the garden

- Warm season crops should be planted after the last frost, approximately May 10th in Delaware.
- Stake and make your rows straight with a planting line (two sticks with twine stretched between them).
- Purchase disease-free, healthy-looking plants and seeds from reliable plant catalogs or garden supply stores.
- Use a hoe or shovel handle to make a furrow the appropriate depth for seed sizes (read seed labels for correct seed planting depth - typically 2 to 3 times deep, the size of the seed width) in the planting line.
- When planting seeds, place and cover the seeds with the appropriate level of soil or vermiculite so you can see where you seeded (according to label directions); gently pat the soil over the seeds.
- Transplants should be planted in the garden soil on cloudy days or late afternoons with little to no wind to reduce water loss.
- Make sure the hole is big enough to hold the transplant's root ball. Plant high rather than too low.

- To help the young plants get established, slowly pour about one cup of water around the roots immediately before filling in the hole with soil. Firm the soil, but don't pack it around the plant.

Control weeds

This garden chore should be considered and discussed before the first soil is turned over and garden plants and seeds are planted.

- Organic mulches such as grass clippings (un-treated), pine bark, leaf mold, aged sawdust, straw and newspapers (black and white print only, no color or shiny advertisement pages) are great mulches to prevent weeds from growing.
- Inorganic mulches are plastics (which come in black, red, silver or clear colors) and weed barrier fabrics.
- Physical control, such as hoeing or hand pulling, is an option. Additionally, rotary tilling between rows and pathways can be an option, but it can damage roots or destroy plants if done too closely to the crops.
- Try using a combination of newspaper (6 - 8 layers of black and white print only) topped with straw or grass clippings (so the paper does not blow to your neighbors). Hoe regularly (be careful not to damage plant roots and turn over too much soil, exposing weed seeds) and/or hand-pull weeds between plants.

Watering

Watering is crucial during establishment (in this case, the first few weeks) of plants, flowering, and drought periods:

- The ideal method is with a soaker or trickle hose; both of these provide water directly to the root area of your garden crops.
- Oscillating sprinklers apply water more evenly and can be adjusted to reach every plant.

- Overhead sprinklers have irregular watering patterns and may miss some of your garden plants.
- Oscillating and overhead sprinklers also water unplanted areas where weeds may grow. Wetting the foliage of your plants may increase disease problems and wastewater.
- Plants need approximately 1 inch of water each week during the growing season.

Other great gardening tips

- Vertical gardening is training plants to grow upward on cages or on a trellis. Cucumbers and other small fruited vine crops grow great and take less room in the garden.
- Tomatoes should be staked or put in a cage to reduce disease problems.
- If using an oscillating or overhead sprinkler, place an empty coffee can in the spraying area in order to measure the amount of water you have applied. Or purchase a rain gauge and place it in the garden area being watered.
- When planting seeds be sure to mark your rows.
- Plant a row or two of flowering plants to encourage pollinators and beneficial insects.
- Keep your garden plot plan up-to-date and make notes on each crop during the growing season. This will help you make decisions for next year's garden.
- Be brave, take a chance, and grow a few plants of a crop you aren't sure you or your family will like. Who knows, it may be the best vegetable you've ever eaten.

Feed your plants

- Growing productive, healthy plants involves paying attention to cultural details.
- Fertilizers are not a cure-all to garden plant production problems. Soils high in organic matter will help with drainage, soil structure,

soil pH and provide good positive results in the garden.

- Remember, a great organic matter is compost. Recycle garden plant debris and add it to your compost pile to use in your garden when finished.
- Most vegetable plants should be given a starter dose of fertilizer and then side-dressed (placed about six inches from the plant's stem) at least once; other crops will require additional feedings. A 5-10-10 (N-P-K) commercial fertilizer is a good choice for feeding your plants that bear fruit (tomatoes, squashes, peppers, eggplant, radishes, carrots, etc.). Leafy crops (lettuces, cabbages, kales, collards, etc.) should get a 10-5-5- or 10-10-10 formulation, depending on the soil sample analysis.

Integrated Pest Management (IPM):

IPM is the practice of using a combination of strategies to keep pests from reducing your harvest and ultimately destroying your crops. It includes cultural, mechanical, biological, and non-chemical control methods and good sanitation practices (keep over-ripe, damaged and infected plants out of the garden area). It is a method that helps keep pest populations low, well below a level of high injury. You should understand and accept that plants can tolerate a certain amount of pest damage, and fruit does not have to look perfect. The components of practicing IPM have been simplified below:

- Scouting - is the first step in IPM. It involves examining enough plants to know what kind, how many and how much damage a pest has caused on each separate crop. Regular scouting is required.
- Cultural Control - includes crop rotation to interfere with disease and insect life cycles. Keep plants healthy and not stressed by planting resistant varieties and maintaining

proper fertility levels and water during droughts.

- Biological controls - are naturally occurring organisms, beneficial insects and parasites that attack pests, like lady beetles (adult and larvae) that feed on aphid pests. To encourage local beneficials, grow herbs and other flowering plants, including native perennials like *Rudbeckia* sp. and annuals such as sweet alyssum.
- Chemical controls are a last resort and are applied when pest thresholds are at a high level and causing great damage. Protecting beneficials should be the first consideration when applying any pesticide. Read and re-read the label before purchasing and using it.
- You may have to construct a fence to keep larger pests (groundhogs, dogs, cats, deer, rabbits and squirrels) out of the garden.

(302) 831-8862; Kent County (302) 730-4000 and Sussex County (302) 831-3389.

Share your garden successes! Be a hit with your family members and neighbors, and a hero to all that add your extra produce to their meals.

This information is brought to you by the University of Delaware Cooperative Extension, a service of the UD College of Agriculture and Natural Resources — a land-grant institution. This institution is an equal opportunity provider.

Common plant families

Crops in Plant Families should not be planted in the same spot year after year in the garden. Rotate crops from different plant families each year (see page 5).

Example of a good crop rotation: Year 1: peas - Year 2- sweet corn; Year 3-cucumber


Example of a poor crop rotation*: Year 1- squash, Year 2- watermelon, Year 3 - peas

* Watermelon and squash are in the same plant family and susceptible to many of the same plant diseases and insect pests.

Contact your local Cooperative Extension Office to help answer your gardening questions and concerns. Whether it's pest questions, recipes, how to preserve your harvested produce, purchase soil tests, or find a location to donate produce; for New Castle County

Alliaceae (Onion Family)	Leek, Onion, Garlic, Chives
Gramineae (Grass Family)	Popcorn, Sweet Corn
Liliaceae (Lily Family)	Asparagus
Apiaceae (Umbelliferae, Parsley Family)	Dill, Celery, Carrot, Parsnip, Parsley
Asteraceae (Composite Family)	Lettuce
Brassicaceae (Cruciferae, Mustard Family)	Mustard Greens, Kale, Broccoli, Cauliflower, Cabbage, Turnip, Radish
Chenopodiaceae (Goosefoot Family)	Beet, Swiss Chard, Spinach
Convolvulaceae (Morning Glory Family)	Sweet Potato
Cucurbitaceae (Gourd Family)	Watermelon, Cantaloupe, Cucumber, Pumpkin, Squash
Leguminosae (pea Family)	Peas, Lima beans, Snap beans, Soybeans
Solanaceae (Nightshade Family)	Pepper, Tomato, Potato, Eggplant

SUGGESTED GARDEN PLAN AND PLANTING DATES

UNIVERSITY OF DELAWARE Cooperative Extension COLLEGE OF AGRICULTURE & NATURAL RESOURCES	SUGGESTED GARDEN PLAN and PLANTING DATES FOR A HOME VEGETABLE GARDEN		Minimum Distance to Adjacent Rows
Spinach -- 4/1 - 3/31 (5/15 - 8/10)	Spinach -- 4/7 - 4/15 (5/25 - 8/15)	Chard -- 4/10 - 5/30 (6/10 - 11/1)	2-1/2'
[Lettuce -- 7/15 - 9/1 (9/15 - 11/10)]			
Lettuce -- 4/1 - 4/15 (5/15 - 8/25)	Lettuce -- 4/15 - 4/30 (6/1 - 7/5)	<i>Onions</i> -- 3/25 - 4/15 (7/4 - 8/30)	2-1/2'
[Carrots -- 7/10 - 8/15 (9/15 - 10/20)]			
Carrots -- 4/1 - 4/30 (6/1 - 7/15)	Carrots -- 5/1 - 5/15 (6/25 - 8/1)	Beets -- 4/1 - 4/15 (6/10 - 8/1)	2-1/2'
[Spinach -- 8/15 - 9/10 (10/1 - 11/15)]			
[Greens -- 7/20 - 8/20 (9/1 - 10/30)]			
[Kohlrabi -- 8/1 - 8/15 (9/15 - 10-15)]			
Peas -- 3/15 - 4/1 (5/20 - 8/20)	Peas -- 4/10 - 4/30 (6/25 - 7/10)	Bush Beans -- 5/5 - 5/15 (7/5 - 7/20)	2-1/2'
[Kale -- 7/10 - 8/10 (9/15 - 11/30)]			
[Cabbage -- 7/20 - 8/20 (9/20 - 11/15)]			
Peas -- 3/15 - 4/1 (5/20 - 8/20)	Peas -- 4/10 - 4/30 (6/25 - 7/10)	Bush Beans -- 5/5 - 5/15 (7/5 - 7/20)	2-1/2'
[Brussels Sprouts -- 7/10 - 8/1 (10/10 - 11/30)]			
[Cauliflower -- 7/10 - 8/15 (9/10 - 11/15)]			
[Broccoli -- 7/20 - 8/20 (9/20 - 11/15)]			
Radishes -- 3/25 - 4/1 (5/1 - 5/10)	Radishes -- 4/7 - 4/15 (5/8 - 8/1)	Greens -- 4/7 - 5/10 (5/20 - 8/30)	2-1/2'
[Beets -- 6/20 - 8/1 (9/1 - 10/30)]			
[Radishes -- 8/1 - 8/10 (9/1 - 9/20)]			
[Kohlrabi -- 3/25 - 4/15 (6/1 - 8/30)]			
[Radishes -- 8/15 - 9/10 (9/20 - 10/15)]			
[Cabbage -- 3/25 - 4/15 (6/1 - 7/10)]			2-1/2'
[Peas -- 7/25 - 8/5 (10/1 - 10/30)]			
[Kale -- 3/25 - 4/15 (6/5 - 7/30)]			
[Bush Beans -- 7/25 - 8/15 (9/25 - 10/15)]			
[Broccoli -- 3/25 - 4/10 (6/1 - 8/15)]			2-1/2'
[Peas -- 7/25 - 8/5 (10/1 - 10/30)]			
[Cauliflower -- 4/1 - 4/15 (6/1 - 7/1)]			
[Bush Beans -- 7/25 - 8/15 (9/25 - 10/15)]			
<i>Tomatoes</i> -- 5/10 - 5/30 (7/20 - 10/15)			3'
Summer Squash -- 5/10 - 5/30 (7/1 - 9/15)	Peppers -- 5/10 - 5/30 (7/15 - 10/20)	Eggplant -- 5/10 - 5/30 (7/20 - 10/15)	3'
Cucumbers -- 5/10 - 5/30 (6/25 - 9/15)			5'
Cantaloupe -- 5/10 - 5/30 (8/1 - 9/15)			
Watermelon -- 5/15 - 5/30 (8/1 - 9/15)			6'
Winter Squash -- 5/10 - 5/30 (8/15 - 10/15)			
Sweet Corn -- 5/1 - 5/15 (7/15 - 8/10)	Sweet Corn -- 5/20 - 8/5 (8/5 - 8/30)	Sweet Corn -- 8/15 - 7/1 (9/1 - 9/20)	2-1/2'
Sweet Corn -- 5/1 - 5/15 (7/15 - 8/10)	Sweet Corn -- 5/20 - 8/5 (8/5 - 8/30)	Sweet Corn -- 8/15 - 7/1 (9/1 - 9/20)	2-1/2'
Sweet Corn -- 5/1 - 5/15 (7/15 - 8/10)	Sweet Corn -- 5/20 - 8/5 (8/5 - 8/30)	Sweet Corn -- 8/15 - 7/1 (9/1 - 9/20)	2-1/2'
30 feet			
<i>Italics</i> = Transplants - all others are direct sow seeds			Total Length ~50 feet
[] = optional fall succession plantings			
() = Typical Harvest Period (May vary depending on specific varieties planted and local weather conditions)			