

# Department of Plant Sciences

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## VINE CROPS FOR THE TENNESSEE VEGETABLE GARDEN

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The term vine crops refers to garden plants in the family Cucurbitaceae. While we refer to them as vegetables, we actually eat the fruit of these crops, which differ in size, shape, color, days to harvest and nutrient content. All crops in this family are grown in Tennessee gardens as warm-season annuals. While most have a spreading growth habit (summer squash has a bush habit), an increasing number of more compact cultivar options are available.

### Crop Description

There are several species in this family used in our garden, but keep in mind that fertilization occurs within species. So, while cross-pollination may occur among some summer or winter squash, it is less common and problematic than many gardeners may think.

Monoecious flowering (where separate male and female flowers bloom on the same plant) is typical in this family, so insect pollination is required. Breeding has introduced some cultivars that bear primarily female flowers (called gyonecious) and cultivars are also available that can produce fruit without pollination (parthenocarpic). In greenhouses, these traits are often combined, but in outdoor production, gyonecious plants are often used with a few monoecious plants (sometimes included in the same packet) to provide pollen. Cucumbers are the most common crops where these non-typical flowering patterns are found, but some squash are available as well.



### Planting and Growing

Well-drained soil is needed because the roots of cucurbits can be quickly damaged by a loss of oxygen in heavy (and wet) soils. Optimum pH is around 6.5 for most of these crops, and recommended pre-plant fertilizer should be added to the garden site. As tender, warm-season annuals, planting or seeding is best after the danger of frost has passed. To increase seed germination, soil temperatures should be 60 F for most vine crops. However, seedless

## Vine Crops for the Tennessee Vegetable Garden

watermelons require much warmer soil temperatures for adequate germination, so these crops are often transplanted or seeded in early summer rather than late spring. Plastic mulches can be a good way to increase soil temperatures. If plastic mulches are used, drip irrigation should be used because plastic mulch with shed much of the rainfall. Plastic mulch and raised beds can also be a good tool to keep fruit clean and reduce deterioration from contact with the ground.

Crop (species)	Cultivar suggestions
Cucumber ( <i>Cucumis sativus</i> )	Dasher II, Saladmore, Fanfare, Straight Eight, General Lee, Diva, Patio Snacker
Muskmelon ( <i>Cucumis melo</i> )	Athena, Ambrosia, Lambkin, Amy
Summer squash ( <i>Cucurbita pepo</i> )	Raven, Spineless Perfection, Tigress, Sunburst, Multipik, Zephyr, Tempest
Winter squash ( <i>Cucurbita maxima</i> , <i>C. moschata</i> , <i>C. mixta</i> )	Butterscotch, Sunshine, Waltham, Bonbon, Honeybear, Honeynut
Pumpkin ( <i>Cucurbita pepo</i> , <i>C. maxima</i> , <i>C. moschata</i> , <i>C. mixta</i> )	Cargo, Racer Plus, Moonshine, Baby Bear, Triamble, Lil' Pump-kee-mon
Watermelon ( <i>Citrullus lanatus</i> )	Sugar Baby, Starlight, Sorbet Swirl, Farmers Wonderful, Mini Love, Crimson Sweet

In many parts of Tennessee, most vine crops are direct seeded because the rapid increase in temperatures in spring lead to stress on transplants that can reduce many of the benefits. Some crops or cultivars that can be challenging to get good germination (like seedless watermelons) could be transplanted as a means of improving plant stand. Spacing of seeds or plants varies by crop and cultivar characteristics. Specifics are listed in the table below.

Crop	Planting dates in TN		Spacing In Row/ Between Rows	Days to harvest	Management notes
	East	West			
Cucumber	5/5-6/15	5/1-6/1	12-18 inches/ 3-6 feet	45-65	Seedless cultivars will have seeds if male flowers are present in other cultivars
Muskmelon	5/5-6/15	4/15-6/1	24 inches/ 4 feet	70-85	
Summer squash	5/10-8/1	4/15-7/15	18-24 inches/ 3-5 feet	45-55	Sequential plantings can be helpful
Winter squash	5/15-6/30	4/25-6/30	24-36 inches/ 4-6 feet	85-105	
Pumpkin	6/1-7/15	5/15-6/15	24-60 inches/ 5-8 feet	85-125	Days to harvest may be faster than listed in the south
Watermelon	5/5-6/30	4/25-5/30	24-36 inches/ 4-6 feet	75-90	Reduce irrigation as fruit ripens if possible to reduce splitting and increase sugars

## Harvesting and Storage

**Cucumbers** — Pick fruit when seeds are still small and flesh is firm. The fruit should still be green as yellowing is an indication of being overripe. Best stored at 50-55 F with high humidity with about one week of storage life.

**Muskmelons** — Pick fruit when the stem pulls away from the vine easily (slips). However, honeydew, French melons, and canary melons don't slip like muskmelons. Best stored at 35-40 F with high humidity and has about two weeks of storage life.

**Summer squash** — Pick fruit when the skin is still tender and glossy. Small fruit often has the highest eating quality. Best stored at 40-50 F with high humidity for one to two weeks.

**Winter squash** — Pick fruit when rind has hardened and is not easily scratched by a fingernail. Best stored at 50 F with moderate humidity. Storage life varies.

**Pumpkins** — Pick fruit when it is fully grown and colored, but before frost. Also be sure to harvest before feeding damage by squash bugs or other pests damages the fruit. Best stored at 50-55 F with moderate humidity for two to three months.

**Watermelon** — Pick fruit when tendrils next to the fruit die back and the underside of the melon changes from white to a creamy yellow. Best stored at 50-60 F with high humidity for a two- to three-week storage life.

## Common Pests, Diseases and Issues in Vine Crops

Description	Possible cause(s) and indicators	Prevention/ Control Steps
Wilting of plants	<ul style="list-style-type: none"> <li>Bacterial wilt (spread by cucumber beetle feeding) — Check for ooze on cut stems.</li> <li>Fusarium wilt — Roots will be discolored inside.</li> <li>Squash vine borer — Inspect base of plant stems.</li> </ul>	Control (spray or exclude) beetle feeding or adult moth borers that lay eggs stems. Fusarium is soilborne, but there are resistant cultivars for some crops. Laboratory ID can be important to ensure that wilt diseases are confirmed and proper treatments are applied.
Feeding damage/bugs	<ul style="list-style-type: none"> <li>Cucumber beetle (see above).</li> <li>Squash bugs.</li> </ul>	Early detection and control of squash bug nymphs is essential. Can transmit yellow vine decline.
Darkened or brown leaf spots	<ul style="list-style-type: none"> <li>Anthracnose — Yellow/water-soaked spots that darken and may fall out. Can also infect fruit.</li> <li>Gummy stem blight — May be zonate, stems may split, and wilt.</li> <li>Alternaria leaf spot — Tan to brown spots, dark rings.</li> <li>Angular leaf spots — Shot hole look, but between veins.</li> </ul>	Leaf spots can be challenging to diagnose and should be confirmed by a diagnostics lab to ensure proper treatment. There are also resistant cultivars for many crops.
Yellowing between veins	<ul style="list-style-type: none"> <li>Downy mildew — Yellowing between veins initially, then browning and death, may see spores on leaf underside.</li> </ul>	Use protective fungicides, some resistance in some crops.
White spots	<ul style="list-style-type: none"> <li>Powdery mildew.</li> </ul>	Use resistant varieties when available and/or preventative sprays.
Odd leaf patterns/stunting	<ul style="list-style-type: none"> <li>Mosaic viruses often have mottled, crinkled, and/or stunted appearance.</li> </ul>	Selecting cultivars with resistance and controlling insect vectors is important.
Ooze on fruit	<ul style="list-style-type: none"> <li>Pickleworm.</li> </ul>	Use sprays or row covers to protect crops.
Darkened end	<ul style="list-style-type: none"> <li>Could be blossom end rot.</li> </ul>	Even moisture and sufficient calcium are needed.



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