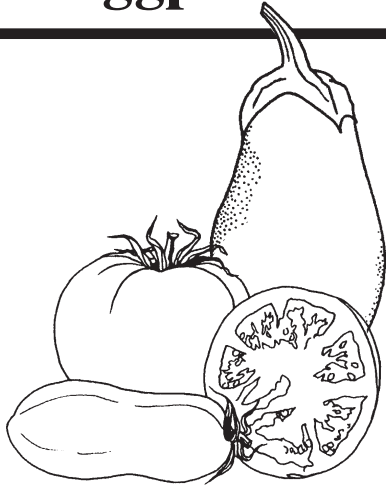


CULTURE AND CULTIVARS

FOR THE GARDENER,
BEDDING PLANT GROWER,
GARDEN CENTER SUPPLIER,
AND DIRECT MARKETER

Growing Tomatoes and Eggplants



CULTURAL PRACTICES

Site Selection

Choose a location with good air circulation and water drainage and at least 8 hours of direct sunlight per day. Avoid excessively windy areas, areas near black walnut or butternut trees, and any exposure to chemicals commonly used on lawns or nearby lots.

Planting Dates

In central Pennsylvania, plant tomatoes from May 20 to June 1, after the danger of spring frost has passed. Plant eggplants from May 27 to June 4 when they are no more than 10 weeks old and when air temperature averages about 70°F during the day. Chilling injury and stunting can occur when night temperatures are below 40°F.

Soil Fertility and pH

Soil testing is strongly recommended to determine soil pH and nutrient status. Soil-testing kits can be purchased from the cooperative extension office in your county or from a garden supply center. The ideal pH range for tomatoes and eggplants is 6.2 to 6.8. Fertilize and lime as directed by soil test results. In the absence of a test, apply 1 inch of compost, then apply to each 100 square feet either 4.5 pounds of 5-10-10 fertilizer (where potash levels are low) or 4.5 pounds of 5-10-5 (where potash levels are high; for example, areas where wood ashes, manures, or high rates of complete fertilizers have been applied in previous years). Then mix into the soil before transplanting.

Spacing

- Staked tomatoes: rows 3 to 4 feet apart; plants 15 to 24 inches apart in the row
- Unstaked tomatoes: rows 2 to 3 feet apart; plants 3 to 5 feet apart in the row
- Eggplant: rows 3 feet apart; plants 18 inches apart in the row

Planting Transplants

If plants are to be homegrown, sow tomato seed 6 to 8 weeks and eggplant seed 8 to 10 weeks before the plants will be set.

Slightly toughen or harden plants the last week before transplanting by placing them outdoors during the day. This helps plants adjust to outside conditions. Withholding water—but not to the point of wilting—and slightly lowering the optimum growing temperature by 10°F or less are the best ways to harden plants. Bring plants in at night if air temperatures are below 50°F.

Plant only well-grown, disease-free plants. A good transplant is slightly hardened, 6 to 9 inches tall, has a sturdy stem (about the diameter of a lead pencil), and a leaf spread about equal to its height. The transplant should be a medium dark green, and the texture of the stem and leaves should be neither soft nor woody, but strong and firm. The root system should be well developed. Eggplants are most successfully transplanted in individual containers such as peat pots. If possible, transplant into moist soil on a cool, cloudy day and then shade plants for a day or two to prevent wilting when the sun is bright. If plants must be transplanted during hot, sunny weather, plant in late afternoon or early evening. Turn in some well-decomposed compost with each transplant. Apply liquid fertilizer or plant starter solution at transplanting; dissolve a 10-55-10, 12-48-8, or similar all-soluble, high-phosphate fertilizer at the rate of 2 tablespoons (1 ounce) per gallon of water. Pour one cup of solution in each hole, set the plant, and press soil lightly around roots.

Mulch

Consider using either black or red plastic, straw mulch, or both. Plastic will help manage weeds, increase soil temperature early in the season, eliminate soil packing and crusting, and maintain a more uniform distribution of moisture throughout the season. Be sure soil is adequately moist before laying plastic. Never lay plastic mulch on dry soil. Straw will allow water to pass through to soil and offer the same qualities of plastic, except that it will not help warm the soil. Apply straw mulch between rows when no further frosts are expected.





PENNSSTATE









College of Agricultural Sciences
Agricultural Research and
Cooperative Extension

SUGGESTED CULTIVARS AND DESIRABLE CHARACTERISTICS

<i>Cultivars</i>	<i>Days to Maturity</i>	<i>Disease Resistance</i>	<i>Suggested Uses</i>	<i>Comments</i>
TOMATOES—EARLY				
🍅 Bush Early Girl*	60	F ₂ , MR, N, V	G	Earliest; largest fruited; 7- to 9-oz fruit; very flavorful; 20-inch-tall bush; determinate
🍅 Ultra Sweet*	62	F, MRV,	G	10 oz; very flavorful; meaty; indeterminate staker
Early/Mid				
🍅 Celebrity*	70	ASC, F ₂ , MR, N, STEM, V	C, G	8-oz fruit; determinate; crack resistant; AAS 1984
🍅 Big Beef*	73	ASC, F ₂ , LS, MR, N, STEM, V	C, F, G	10- to 12-oz glossy globe; quick-freezes as 3/8-inch-thick slices; indeterminate; for bedding plant; AAS 1994
🍅 Better Boy VFN*	74	F, N, V	C, G	Standard; indeterminate; 10-oz fruit
Main Season				
Mountain Fresh Plus*	76	ALS, F ₂ , N, V	C, G	Improved 'Mountain Fresh' with nematode tolerance; very good flavor
Fabulous*	77	ASC, F ₂ , MR, STEM, V	C, G	Excellent flavor; uniform green; 10-oz fruit
🍅 Sebring*	77	F ₃ , FC, STEM, V	C, G	12-oz fruit; very high yield
Delicious	79		G	Very flavorful; meaty; world record—size fruit; large plant; nonhybrid
Biltmore*	80	ASC, F ₂ , STEM, V	C, G	10- to 12-oz, very glossy fruit; high quality; very firm
Red Lightening	82		G	Improved 'Red Zebra' type; "hand-painted" yellow stripes on red
Gold-Fruited				
Sweet Tangerine*	68		G	6-oz fruit; deep orange; sweet; determinate
🍅 Golden Milano*	70	F, V	C, F, G	For canning, freezing, fresh, or novelty sauces and salsa; easy to peel
Husky Gold*	70		G	6-oz fruit; tangerine orange; staked container; AAS 1993
🍅 Carolina Gold*	75	F ₂ , V	C, F, G	Light tangerine color throughout; graywall tolerant
Pink-Fruited				
Sugary*	65		G	Pink grape; sweet; balanced; pointed blossom end; cut in half; AAS 2005
Pink Beauty*	74		G	7-oz fruit; good tasting pink
Tough Boy*	75	F, N, V	G	8 oz; 6 per cluster
🍅 Pink Girl*	76	ASC, F, STEM, V	C, G	Juicy and mild; 8-oz fruit; novelty increase marketing effort
Brandy Boy*	78		G	Higher yielding, earlier 'Brandywine' type
Paste or Saladette				
🍅 Juliet*	60	LB, STEM	C, G	Giant grape saladette—cut in half for salads; no cracking; glossy; AAS 1999
Early Cascade*	62	ALS, F, LS, V	C, G	Early; full season; flavorful, round saladette
🍅 Sweet Chelsea*	64	CLM, F, MR, N, V	G	Red, sweet, glossy, round saladette
🍅 Golden Milano*	70	F, V	C, F, G	For canning, freezing, fresh, or novelty sauces and salsa; easy to peel
🍅 Viva Italia*	72	A, BS, F ₂ , N, STEM, V	C, F	Very high-yielding sauce and paste type
Tuscany*	72	F ₂ , N, V	D, G	Saladette; sauces, salsa; heat tolerant
🍅 Mariana*	74	ASC, F ₂ , N, V	C, G	4-oz oval fruit; uniform green
Healthkick*	75	F, V	C, G	50% more lycopene than typical; fantastic in sauce or sliced
La Rossa*	75	F ₂ , V	C	Deep-red sauce and paste type
🍅 Muriel*	75	F ₂ , ASC, BS, N, STEM, TSWV, V	C	4-oz plum fruit; uniform green
Roma VF	75	A, F, V	C	Standard; nonhybrid paste
🍅 Puebla*	76	ALS, ASC, BS, F ₂ , N, STEM, V	C, F, G	3- to 4-oz pear; paste, saladette, or sauce; determinant
Plum Crimson	77	F ₃ , V	C, F	High lycopene; large, deep-red saladette

<i>Cultivars</i>	<i>Days to Maturity</i>	<i>Disease Resistance</i>	<i>Suggested Uses</i>	<i>Comments</i>
Cherry				
 Sun Sugar*	62	F, MR	G	Golden yellow, 0.5-oz fruit; early; crack resistant; high sugars
 Super Sweet 100*	65	F, V	G	Extra sweet; crack tolerant
Sweet Million*	65	F, LS, N, MR	G	Extra sweet; crack tolerant
Sweet Baby Girl*	65	MR	G	1-oz; sweet; bright red, thin-skinned fruit
Jolly*	75		G	Pink, large, sweet fruit; pointed blossom end; cluster type; indeterminate; AAS 2001
Patio Type				
Orange Pixie*	52	F, V	G	Earliest good container type
 Bush Early Girl*	60	F ₂ , MR, N, V	G	Earliest; largest fruited; 7- to 9-oz fruit; very flavorful; 20-inch-tall bush; determinate
Husky Gold*	70	F, V	G	6 oz; tangerine orange; staked container; AAS 1993
Patio*	70		G	Dwarf compact bush type; excellent for containers and home gardens; deep oblate fruit; potato-leaf type
Super Bush VFN*	85	F, N, V	G	Best red bush; nonstaking
Grape Type				
 Mini Charm	60	F ₂ , MR, V	G	Grape size and shape; extra sweet
Tami G*	61		G	Very sweet; firm; long harvest; indeterminate
Sugar Snack*	65	N, MR	G	Deep red; very sweet; indeterminate
Sugary *	65		G	Pink grape; sweet; balanced; pointed blossom end; cut in half; AAS 2005

HEIRLOOM CULTIVARS—Heirloom tomatoes have not been listed because selecting a cultivar is very subjective and they usually are more susceptible to pests and/or more difficult to grow. We strongly suggest that you first compare your favorite cultivars with the ones recommended above. Once you have had success with these, you may wish then to experiment with the tastes, textures, colors and appearances offered by heirloom cultivars.

EGGPLANT				
 Millionaire*	55	APT	G	Pick at 8 inches by 1.5 inches; Japanese type—purple calyx
 Orient Express*	58	APT	G	Slender; 9 inches by 1.5 inches; glossy black with purple calyx
Fairy Tale*	58		C, G	Slim; 4–5 inches; violet with white stripes; AAS 2005
Calliope*	60-64		G	Small, oval, variegated fruit; for baby (2-inch) or mature (4-inch) harvest
Beatrice*	62		G	Hybrid form of 'Rosa Bianca'; earlier and brighter colored
Little Fingers	63		C, G	Pick at 4 inches by 0.75 inch to 7 inches by 1.25 inches; clusters of fruit
 Dusky*	63	MR	G	Early, standard type
 Epic*	64	MR	G	Early, very high yielding
 Neon*	67	APT	G	Nonbitter, mildly sweet; beautiful deep-pink with mint green calyx; 8 inches by 3 inches
Zebra	68		G	Elongate/oval; violet with white stripes; green calyx
 Classic*	76	APT	G	9 inches by 3 inches; elongated teardrop
Ghostbuster*	80		G	Best white; smooth, tender, mild

* = F1 Hybrid



 = also recommended for direct market and sustainable agriculture enterprises since they have high yield potential, pest resistance/tolerance, and quality

Disease resistance: **A** = anthracnose resistant/tolerant; **ALS** = Early blight or Alternaria leaf spot resistant/tolerant; **APT** = apparent field tolerance—little to no pest damage over several years of observation; **ASC** = Alternaria stem canker resistant/tolerant; **BS** = bacterial speck resistant/tolerant; **CLM** = Cladosporium leaf mold resistant/tolerant; **F** = *Fusarium* resistant or tolerant to race 1; **F₂** = resistant or tolerant to *Fusarium* races 1 and 2; **F₃** = resistant or tolerant to all three *Fusarium* races; **FC** = Fusarium crown rot resistant/tolerant; **LB** = late blight tolerant; **LS** = leaf spot resistant/tolerant; **MR** = tomato mosaic resistant; **N** = root knot nematode resistant/tolerant; **STEM** = *Stemphylium* resistant/tolerant; **TSWV** = tomato spotted wilt virus resistant/tolerant; **V** = *Verticillium* tolerant

Suggested uses: **C** = canning; **D** = drying; **F** = freezing; **G** = fresh from the garden

Comments: **AAS** = All America Selections winner

Irrigation

Drip irrigation used with some form of mulch will provide the most efficient use of water and optimize growing conditions. Drip irrigation places the water in the root zone of the plant without wetting the foliage, which can help reduce incidences of disease. Drip irrigation kits can be purchased at most garden supply outlets and will come with all the necessary components and directions for installation. Once drip irrigation is installed, fertigation can be used to feed the crop via the drip irrigation system.

If using overhead sprinklers, a general recommendation is to apply a half inch of water twice a week. Decrease the amount of water applied with heavy (high in clay) soil types, low air temperatures, low levels of wind, and to account for rainfall. The best time to overhead irrigate is early in the morning on a bright, sunny day.

If watering with a hose, do not use a pistol-grip nozzle. Use a rose or dramm head and apply water until the soil is thoroughly wet.

Cultivation and Pruning

Never cultivate or hoe deep enough to damage plant roots. Prune side shoots (suckers) off tomatoes if you wish, but never remove additional leaves near the top of the plant (where fruit is produced) until about September 1. Removal of leaves results in more sunscald on fruit and lower fruit production. Of course, remove and discard any blighted bottom leaves as they appear.

HARVEST TIME

Harvest tomatoes when fully ripe for best flavor and nutrition. Pick eggplant as soon as it attains satisfactory size, but before the surface loses its bright, glossy appearance; dullness indicates overmaturity and loss of quality. White seed becomes brownish in overmature fruits.

SPECIAL PRECAUTIONS

Eggplant is more sensitive to cold temperatures than tomato. Eggplants can be injured by prolonged cool weather even without frost. Both set fruit optimally when night temperatures range from 58 to 70°F. Fruit setting is reduced when night temperature is below or even much above this optimum range. Tomatoes are about 95 percent self-pollinated; eggplants are almost 50 percent insect pollinated, so encourage bees to visit eggplants. For tomatoes, other factors responsible for or associated with the failure of blossoms to produce fruit are cultivar, overly hardened transplants, virus, lack of sunshine or water, high winds, and excessive vegetative growth in the early stages of plant development.

WEED MANAGEMENT

Dense weeds not only rob vegetables of moisture, light, and nutrients, but can also harbor insects and create an ideal environment for many disease causing organisms. Eliminate young weed seedlings with shallow hoeing or cultivating. Never allow weeds to set seed. Place mulch such as straw or newspaper around plants and between rows to reduce weeds and conserve moisture. Manage perennial weeds year-round near and in plantings as they can harbor disease-causing organisms.

To help keep weeds and weed seeds out of the planting during the fall and winter months, consider sowing a cover crop (for example, annual ryegrass or spring oats mixed with hairy vetch) in late summer or fall. Turn the cover crop into the soil about one month before spring planting.

As a general rule, avoid using herbicides for weed management in the home garden for several reasons. First, no one herbicide is available that can be safely used on all kinds of vegetables growing in the garden. Second, herbicides are difficult to apply at proper rates in small areas with hand sprayers. In most cases, some areas will receive too little herbicide for effective weed control and other areas may receive such heavy rates that the crop will be damaged or killed. You also risk damaging or killing other plants from spray drift when using herbicides. Finally, avoiding herbicides eliminates potential adverse health affects.

Direct marketers desiring any chemical pest management should consult the *Pennsylvania Commercial Vegetable Recommendations* guide (available through the cooperative extension office in your county).

DISEASE IDENTIFICATION AND MANAGEMENT

Wilts

Plants wilt and may die. There are several different causes of wilts. Some soil fungi (*Verticillium* and *Fusarium*) can cause wilting. In other cases, a toxin from black walnut and butter-nut tree roots also can cause wilting. In addition to wilting, the internal woody stem tissue turns brown in affected plants.

Management: Avoid planting in areas where tomatoes, eggplants, peppers, potatoes, strawberries, and brambles were grown during the past few years. Do not plant near walnut or butter-nut trees. Grow tomato cultivars resistant to fungus wilts (see the cultivar table). As soon as harvest is complete, pull and destroy or discard plants.

Leaf Spots of Tomatoes (Early Blight, Late Blight, Septoria Leaf Spot)

Early blight symptoms are dark-brown spots with dark, concentric rings. Septoria leaf spot symptoms are usually dark; eventually the center of the spot becomes whitish to light brown, sometimes with tiny, dark specks evident in the light area. Both early blight and

Septoria leaf spot symptoms usually start on the oldest leaves. Spotted leaves die prematurely, resulting in early defoliation, fruit sunscald, and poor fruit color. Late blight affects fruit and leaves. Irregular, greasy, gray areas develop on leaves, which expand rapidly in wet weather.

Management: See measures for management of fruit rot (below).

Fruit Rots of Tomatoes (Anthracnose, Early Blight, Late Blight)

Many rots develop on fruit that touch the soil. Discrete spots also can develop on other fruit. Fruit rots are promoted by contact with soil and by wet conditions.

Management: Choose a sunny planting site. Avoid areas where tomatoes were grown the past few years. Ensure adequate fertility by following soil test recommendations. Space plants to promote drying-off of leaves and fruit; later, stake plants to keep fruit off the ground. When leaf surfaces are dry, consider removing and discarding any blighted bottom leaves as soon as they are affected. Use appropriate fungicides when necessary. If leaf blights and fruit rots occur most

years, spray with labeled fungicides when diseases are anticipated and repeat at 7-day intervals as needed. Use a pesticide that contains one or more of the following fungicide materials noted on the label: chlorothalonil, mancozeb, and (fixed) copper. Follow the label. Remove plants as soon as harvest is complete to reduce amount of fungal and bacterial inoculum that could be left in the soil as plant tissue decomposes.

Blossom-End Rot of Tomatoes

This physiological (nonpathogenic) disorder appears as a large, dry, brown to black, often depressed, leathery area at the blossom end of fruit.

Management: Ensure adequate calcium and other nutrients in the soil by following soil test recommendations. Avoid moisture stress by mulching around plants, irrigating when dry, and avoiding close and deep cultivation that damages roots. The best irrigation for tomatoes is a slow watering that results in deep wetting of the soil without wetting the leaves. This encourages the plant to grow deep roots and avoids spreading other disease organisms on leaves and fruit.

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