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## Companion Planting

Plants, like people, influence one another. Some get along better together than others. Black walnut and butternut have an antagonistic relationship with tomatoes, for example. The toxin juglans exuded from the trees' roots is quite toxic to several plants, including those of the nightshade family such as tomato, pepper, and eggplant. Plant neighbor relationships might take several forms. First, they may improve the health or flavor of a companion. Second, they may interfere with the growth of a neighbor. Third, they may repel or trap an undesirable critter. Companion plant may also attract a beneficial insect.

Although there are several references about beneficial relationships between plants, the science of companion planting is often anecdotal. There appears to be no research proven reproducible companion planting recommendations. There are numerous suggestions rooted in organic agriculture. The suggestions below are a starting point for individual trials. Localized growing environment influence success or failure. Certainly, a mixed plant community rather than a monoculture is a model for companion planting. The array of colors, aromas and ripening times often confuse plant pests in these situations. The following are a few plants that seem to help one another. The garden should test and trial. Continue doing what works and abandon what does not.

**Asparagus** – A good method for planting is in a long row at one side of the garden. After harvest, plant tomatoes on either side, and both plants reap benefits from each other. Parsley planted with asparagus seems to provide vigor to both.

**Beans** – Generally, beans thrive when interplanted with carrots, cauliflower and beets. They also aid cucumbers and cabbage. A Summer Savory companion improves growth and flavor as well as repelling bean beetles. As a bonus, cook both together for a great flavor. Beans don't like members of the onion family and they dislike being planted near gladiolas.

**Beets** – Beets grow well near bush beans, onions, and kohlrabi, but dislike *pole* beans. In addition, lettuce and brassicas are good companions.

**Cabbage** – Cole crops such as cabbage, kale, kohlrabi, broccoli, and Brussels sprouts as well as collards, rutabagas and turnips. They do well when planted with aromatic plants such as dill, celery, chamomile, sage, peppermint, and rosemary. Do not plant with tomatoes, pole beans or strawberries.

**Carrots** – Onions, leeks and herbs such as rosemary, wormwood, and sage act as repellents to the carrot fly.

**Corn** – Sweet corn does well with potatoes, peas, beans, cucumbers, pumpkin, and squash. Melons, squash, pumpkin and cukes like the shade provided by corn.

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## Companion Planting

**Cucumbers** – Cukes seem to be offensive to raccoons, so it's good to plant them near your corn. Thin strips of cucumbers also repel ants. Sow 2 or 3 radish seeds in cucumber hills to repel cucumber beetles. Don't pull the radishes even if they go to seed. Cukes and potatoes are antagonistic. Cukes do not grow well with aromatic herbs.

**Lettuce** – Lettuce grows well with strawberries, cucumbers and carrots. Radishes grown with lettuce are especially good.

**Onion** – Onions and all members of the cabbage family get along well together. They also like beets, strawberries, tomatoes, lettuce, summer savory and a sparse planting of chamomile. They do not like peas and beans. Ornamental relatives of the onion are helpful as protective companions for roses. Since onion maggots travel from plant to plant when set in a row, scatter your onion plants throughout the garden.

**Sweet Pepper** – Basil and sweet peppers have similar general requirements. They work well when planted together.

**Squash** – As with cucumbers, 2 or 3 icicle radishes planted in each hill help prevent insects on squash. Again, let them grow and go to seed. Nasturtiums repel squash bugs. Also, squash planted either earlier or later than usual will often remain insect free.

**Tomato** – Tomatoes and all Cole crops should be kept apart. Tomatoes also dislike potatoes and fennel. Tomatoes are compatible with chives, onion, parsley, marigold, nasturtium and carrot. Garlic planted between tomato plants protects them from red spider mites. Tomatoes protect roses against blackspot. **A spray for roses:** make a solution of tomato leaves in your blender by adding 4 or 5 parts of water and 1 tablespoon of cornstarch. Strain and spray on roses where it is not convenient to plant tomatoes as companions.

The best way to see how companions interact with each other is first follow the given guidelines. Secondly, and most importantly, keep careful records of your successes and failures. Learn the basic combinations and then experiment with your own. Just as every person is different, no two gardens are alike. That is why personal observation is so important.

Resources: *Carrots Love Tomatoes*, by Louise Riotte; several books from Rodale Press.

## Pests and the Plants that Repel Them

Certain plants are believed to repel insects.  
Use the list below to help you map out your next planting arrangement.

<b>Pest</b>	<b>Repellent Plant(s)</b>
Ant	Mints, tansy, wormwood
Aphid	Most aromatic herbs, including catnip, chives, clover, coriander, eucalyptus, fennel, garlic, larkspur, marigold, mustard, nasturtium, peppermint, spearmint
Asparagus beetle	Basil, calendula, nasturtium, parsley, tansy, tomato
Cabbage butterfly	Southernwood, tansy
Cabbage Looper	Catnip, dill, eucalyptus, garlic, hyssop, nasturtium, onion, pennyroyal, peppermint, rosemary, sage, southernwood, spearmint, thyme, wormwood
Cabbage maggot	Garlic, marigold, radish, sage, tansy, thyme, wormwood
Carrot fly	Basil, leek, lettuce, nasturtium, onion, rosemary, sage, tansy, tobacco, wormwood
Codling moth	Garlic, wormwood
Colorado potato beetle	Catnip, coriander, eucalyptus, marigold, nasturtium, onion, tansy
Corn earworm	Cosmos, geranium, marigold, thyme
Cucumber beetle	Catnip, corn, marigold, nasturtium, radish, rue, tansy
Cutworm	Spiny amaranth, tansy
Flea beetle	Catnip, marigold, nasturtium, peppermint, rue, spearmint, southernwood, tansy, tobacco, wormwood
Flies	Basil, tansy
Imported Cabbageworm	Dill, garlic, geranium, hyssop, peppermint, nasturtium, onion, pennyroyal, sage, southernwood, tansy, thyme, borage
Japanese beetle	Catnip, chives, garlic, nasturtium, odorless marigold, tansy, white geranium
Leafhopper	Geranium, petunia
Mexican bean beetle	Garlic, marigold, nasturtium, rosemary, savories
Mouse	Wormwood
Mole	Castor bean, narcissus
Mosquito	Basil
Nematodes	Calendula, French marigold
Peach borer	Garlic
Pests in general	Oregano
Rabbit	Garlic, marigold, onion
Slug and snail	Fennel, garlic, rosemary
Spider mite	Coriander, dill
Squash bug	Catnip, marigold, nasturtium, peppermint, petunia, radish, spearmint, tansy
Squash vine borer	Radish
Tomato Hornworm	Borage, calendula, dill, opal basil, thyme
Whitefly	Basil, nasturtium, peppermint, thyme, wormwood
Wireworm	Clover

## Plants Helping Other Plants

Listed below are a few of the plant combinations that gardeners have long recommended. None has been scientifically proven, but some do seem to make good common sense as interplants. Test them yourself.

<b>Plant</b>	<b>Plant(s) It Enhances</b>
Anise	Coriander
Basil	Pepper, tomato
Bee balm	Tomato
Borage	Bean, strawberry, tomato, squash
Chamomile	Cabbage family, cucumber, most herbs, melon, onion
Chervil	Radish
Chives	Carrot, grape, rose, tomato
Coriander	Anise
Dandelion	Fruit trees
Dead nettle	Potato
Dill	Cabbage family, lettuce, onion
Dill, <i>Immature</i>	Tomato
Garlic	Rose, beet, cabbage family
Horseradish	Potato
Hyssop	Cabbage, grape
Larkspur	Bean, cabbage
Lovage	Bean
Marigold	Potato, rose, tomato
Mint	Cabbage, pea, tomato
Mustards	Bean, fruit trees, grape
Nasturtium	Cucumber, radish
Onion	Beet, cabbage, lettuce, strawberry
Oregano	Pumpkin
Pigweed	Corn, melon
Rosemary	Bean
Rue	Fig
Sage	Cabbage, carrot, strawberry, tomato, marjoram
Savories	Bean, onion
Summer savory	Melon
Sow thistle	Melon
Tansy	Blackberry, raspberry, rose
Tarragon	Most vegetables
Thyme	Eggplant, potato, strawberry, tomato
Yarrow	Most aromatic herbs

## Plants Harming Other Plants

These are the herbs that gardeners have suggested as “harmful” to certain neighboring plants. Don’t let this scare you. Any plant deserves to remain innocent until proven guilty. So far, there’s almost no scientific “proof” to back up most of these claims. The only plant that should perhaps concern the gardener is wormwood, which does contain some toxins.

Plant	Crop(s) It Harms
Anise	Carrot
Aster	Sugar maple, red pine, tulip poplar, black cherry
Balsam poplar	Green alder
Beets	Pole bean
Black cherry	Red pine, red maple
Black walnut	Pine (Austrian, red, Scotch, white); apple, white birch
Cabbage	Strawberry
Chives	Bean, pea
Chrysanthemum	Lettuce
Coriander	Fennel
Dill	Carrot, tomato
Fennel	Bean, pepper
Foxtail & Smooth broome	<i>Populus</i> sp.
Garlic	Bean, pea
Golden rod	Sugar maple, red pine, tulip poplar, black cherry
Hyssop	Radish
Kentucky bluegrass	Azalea, barberry, <i>Taxus</i> , forsythia, <i>Cornus</i> sp.
Kohlrabi	Tomato
Larkspur	Beet
Mustard	Turnip
Onion	Bean, pea, sage
Perennial rye	Apple, forsythia, <i>Cornus</i> sp.
Pole bean	Beets
Potato	Pumpkin, squash, turnip
Red fescue	Azalea, barberry, <i>Taxus</i> , forsythia, <i>Cornus</i> sp.
Rhododendron	Douglas fir
Rue	Basil, cabbage, sage
Sage	Onion
Sassafras	Box elder, elm, silver maple
Shallot	Bean
Southern red oak	Sweetgum
Sugar maple	Yellow birch, white spruce
Sumac	Douglas fir
Sycamore maple	Yellow birch
Tall fescue	Black walnut, sweetgum, white ash
Tansy	Collard
Tomato	Kohlrabi
Wormwood	Most vegetables

Colorado Microclimate Tips  
Companion Planting  
May 8, 2019

1) Soil

Alkaline Ph

Heavy clay

increasing organic matter develops larger particles of soil and increases drainage.  
To avoid excessive salt levels, incorporate compost to depth of 6-8inches  
Increase organic matter to 4 or 5% over several years using compost, fall leaves, straw

Avoid compaction

Wet soil evaluation: squeeze handful of soil. If it crumbles it can be worked  
Till only enough to add compost and not disturb seed bank  
Mulch to lessen compaction by winter rains and sprinklers

2) Sun and water and low humidity

Harden off plants before transplanting which helps adaption to sunlight and protect from wind

Provide shade to extend season for cool season plants which like temps less than 70

Fruit set is reduced on tomatoes, peppers and eggplants when temperatures are above 90 by midmorning

Select drought tolerant plants. Beans and eggplants have high water needs

Cucumber and zucchini have similar water needs

3) Growing season is shorter around 145 days

Shorter at higher altitudes

Last frost date: Mother's Day

First frost date: October 7th

4) Hail damage

Root crops may not recover if all foliage is lost

Leafy vegetables may recover. Replant after a week or so

If later in season root crops may survive

Replace with cool season vegetables

5) Plant selection should include water needs, short growing season and space needed

Maturity dates are often shorter for mini veggies

Eight ball mini zucchini, Baby eggplant, Peter Pan patty pan squash,

Bonus baby corn, Toy choy, Gurneys Yum Yums mini bell sweet pepper,

Caracas baby carrot, Tom Thumb lettuce, Current tomatoes

Tomato varieties: select cultivars with shorter maturity. Early Girl, Big Beef, Celebrity, Medina and cherry tomato varieties

6) Consider advantages of block planting

- Provides shade to roots
- Limits weeds
- Lessens soil compaction
- Provides greater yield

7) Pests

- Beneficial insects: predators feed on herbivorous insects
- Pollinators 1/3 of our food depends on them
- Scavengers/ decomposers return nutrients to soil

Only 1% of insects are pests! Identify first!

Flea beetles have plant preferences. Mature plants have better chance of survival.  
Cabbage flea beetles are most active in June

Squash bugs have moved north of I-70

8) Weed management

Heavy clay soil will clog weed barrier fabric and black plastic

Prevent seed production and spread

Summer annuals: seeds germinate in spring, produce plants and seeds in summer and plant dies with first frost

- common mallow, common purslane, crabgrass

Winter annuals: seeds germinate in later summer or fall, plant overwinters as small tufts of leaves then it grows to maturity in spring. Then it dies with summer heat

- cheat grass, shepherd's purse

Mechanical methods of control

Remove foliage to starve root system

Creeping perennials: seeds, creeping aboveground or extensive root system

- Creeping bindweed, white clover

**MULCH!!**



CMG GardenNotes #717

# Growing Tomatoes

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## Variety Selection

There are over 2,000 cultivars of tomatoes grown worldwide. Ask neighbors, local gardeners, and garden center staff about local favorites.

Hybrid tomatoes are popular in the United States to reduce problems with *Verticillium* and *Fusarium* wilt, common soil-borne pathogens. Early hybrids were developed for their yields and disease resistance. Flavor became a driving factor in the breeding of newer hybrids. Some gardeners prefer to trade off the disease protection of hybrids for the rich “tomato-ey” flavors of heirloom varieties.

For early production, *Early Girl* is a popular variety with mid-size fruits. *Celebrity*, *Big Boy*, and *Better Boy* are examples of popular main season varieties. Many gardeners prefer the rich tomato flavor of heirloom *Brandywine* or the large beefsteak types. Pear tomatoes and yellow types are gaining popularity.

Cherry and the new grape-type tomatoes are popular for salads and snacking. Many, but not all, have small size vines suitable for container gardening. [Figure 1]

Figure 1. **Sweet 100** is the most popular home garden cherry-type tomato. On a large vine, it produces hundreds of sweet, cherry sized fruits with very tender skins.



Requiring less time to cook down, paste types such as *Roma* and its descendents are preferred for making salsa, chili sauce, and other tomato products. Be aware that paste types and standard varieties are not directly interchangeable in recipes.

Where the growing season is short, select *Early Girl* and other cultivars that will mature in 50 days or less. In many mountain communities, tomatoes may only be successfully grown in a structure or adjacent to the south side of a building to provide frost protection and warmer growing temperatures.

Whatever type you prefer, VFN resistant hybrid varieties are recommended. The abbreviation VFN indicates resistance to *Verticillium* wilt, *Fusarium* wilt, and nematodes. *Verticillium* and *Fusarium* wilts are common soil-borne fungal diseases. Nematodes are not an issue in Colorado due to cold soil temperatures. Researchers have found multiple strains of *Verticillium* and *Fusarium*, so if you are having problems with these diseases, try other VFN varieties.

**Vine types** – There are two types of vines: *indeterminant* and *determinant*. Most popular home garden varieties are indeterminant. The vine keeps growing through the growing season, extending fruit production until frost kills the vine. Plant size is typically large. Determinant types are common in commercial production as vine growth stops when flowering begins; plants will typically be moderate in size. Determinant types put on a large single crop. They may be suitable for container planting where trellises are not possible.

## Planting

### Planting Time

For optimal growing, tomatoes need warm temperatures: above 52°F at night and above 60°F during the day at transplant. They are readily killed by a light frost. A week of cool daytime temperatures (below 55°F) will stunt plants, reducing yields.

With these warm temperature requirements, planting time along the Colorado Front Range is typically late May. Do not plant tomatoes out into a cold spell and make sure soil temperatures are warm.

To get a head start on the season, gardeners use a variety of frost protection techniques. The Wall-of-Water® provides protection into the mid teens, or lower. Cool soil temperatures also inhibit early growth. When using a Wall-of-Water, also use black plastic mulch to help warm the soil. Be cautious in filling the Wall-of-Water not to splash water around, as a wet soil will be slow to dry and warm in the spring. [Figure 2]

Figure 2. Wall-of-Water protects individual plants down to the mid-teens.

Notice that black plastic mulch was also used to warm the soil. Cool soil temperatures are also a growth-limiting factor with early plantings.



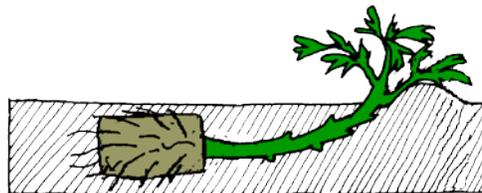
## **Selecting the Ideal Plants**

The ideal tomato transplant is dark grass green and six to eight inches tall. The stem is about pencil size in diameter and the plant has not been pruned or cut back. Transplants are hardened-off (growth rate slows so the plant is more tolerant of the move the greenhouse environment to the bright, windy outdoors) by withholding water and/or nutrients or by exposure to cooler temperature.

**Plant leggy transplants horizontally** – When gardeners are shopping for transplants in the warm greenhouse conditions of May, tomato plants quickly grow from ideal size to tall and leggy. The white bumps along the leggy tomato stem are roots beginning to form.

Plant these taller leggy transplants horizontally. Dig a trench a two to three inches deep. Place the plant horizontal with only the top two to three sets of leaves showing above the soil. Pinch off other lower leaves below the soil line before planting. These leggy plants readily root out along the stem in the warm soil near the surface, supporting rapid growth. [Figure 3]

Figure 3. Plant tall leggy tomatoes horizontal in a shallow furrow.



## **Space and Trellis Plants**

To minimize Early Blight, space and trellis plants to allow for good air circulation and promote rapid drying. Trellised tomatoes are easier to pick and less preferred by tomato psyllid insects. Trellising eliminates problems with fruit rotting where they touch the ground.

The minimal spacing for trellised tomatoes is two feet apart in a hedgerow. Research has demonstrated that crowding plants will not increase yields, but will increase disease problems.

**Cages** – The American Society for Horticultural Science suggests a trellis two feet in diameter by four to five feet tall. It is easy to make from a 6½-foot length of concrete reinforcing mesh. Cut off the bottom ring of wire so the cages can be pushed into the ground. When a branch sticks out of the cage, simply tuck it back in. [Figure 4]

For the smaller-vined, determinant types, two cages may be made from a 6½-foot length, cutting the height in half. Cages will be two feet diameter but only 3-feet tall.

Commercially available cages are too small for most popular tomato varieties grown on good soils.

Figure 4. Tomatoes planted in a raised bed with black plastic mulch and cages made from concrete reinforcing mesh.

Cages are six feet around, two feet across, and five feet tall. On improved soils, tomato vines will loosely fill the cage, allowing for good air circulation and easy picking.



Tender transplants are rather sensitive to cool winds. Wrapping the cages with a plastic sheet or newspapers to provide wind protection for the first week helps plants acclimate.

Figure 5. Wrapping the tomato cage with plastic or newspapers protects tender plants from cold winds.



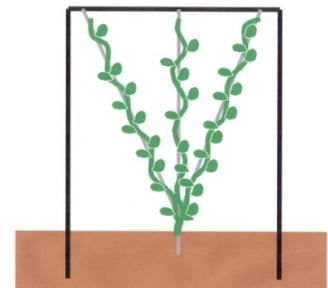
**Single pole trellis** – Some gardeners prefer to trellis tomatoes on a single pole or stake. To do this, prune plants to a single trunk by removing all side shoots. This requires constant removal of side shoots.

Figure 6. Tomatoes trellised to a single pole.



**Fan trellis** – Another method, which produces larger fruit, is to trellis to a three-trunk, fan shape, removing all other side shoots. This requires a sturdy frame to support the weight of the vine and fruit.

Figure 7. Tomatoes trellised into a fan shape.



## Mulching

As with any crop, surface mulch is recommended to conserve soil moisture and manage weeds. Mulching helps reduce the splashing of Early Blight fungal spores from the soil onto the leaves. It also helps stabilize soil moisture levels, reducing the incidence of blossom end rot.

Black plastic mulch is popular for tomatoes, warming the soil and pushing production two to three weeks earlier. When using black plastic mulch, crops must be planted early so plant growth covers and shades the plastic before summer heat sets in. .

## Irrigation

Avoid overhead sprinkling on tomatoes. Fungal spores are easily water-splashed from one leaf to another, and water on the leaves creates a favorable environment for disease development. Watering in the morning, allowing plants to dry before nighttime, may also be helpful.

## Fertilization

Tomatoes have a low nitrogen requirement. Under high nitrogen conditions, vines grow excessively large at the expense of fruit production. More correctly stated, tomatoes are a fussy nitrogen feeder. On soils low in organic matter, tomatoes typically run out of nitrogen in mid-summer, reducing yields and predisposing the plants to Early Blight.

**At transplanting**, apply one to three applications (depending on soil organic content) of a water-soluble, “plant starter” fertilizer. This includes any of the water-soluble products like MiracleGro, Peters, RapidGro, Schults, etc. Transplants would have been “hardened off” (growth slowed) in the greenhouse. Water-soluble fertilizers stimulate renewed growth.

If the weather turns cold late spring after tomatoes are out (that is a week with daytime temperatures below 55°F), use water-soluble fertilizers to stimulate growth when warm temperatures return. A week with daytime temperatures below 55 °F stunts tomato growth, reducing yields.

**Mid-summer** – On low organic matter soils, tomatoes typically run out of nitrogen in mid to late summer. Yellowing of the foliage, starting with lower leaves, is the typical symptom of nitrogen stress. Low nitrogen in the plant allows Early Blight disease to spread like wildfire. Keeping nitrogen levels up in mid to late summer is a primary means of Early Blight control and significantly improves yields.

Fertilize tomatoes lightly as the first fruits reach two-inches in diameter. Water-soluble fertilizers (such as MiracleGro, RapidGro, and Peters) used according to label directions make a good summer fertilizer supplement. Make applications every two to four weeks, depending on soil organic content.

If using a dry granular fertilizer, apply 21-0-0 (ammonium sulfate) at the rate of one level tablespoon per plant. Sprinkle the granular fertilizer in a wide circle 12 to 20 inches out from the plant, and water in. Dry granular fertilizers can easily kill tomatoes if over-applied.

## Pollination and Summer Temperatures

Tomato pollination is temperature dependant. If nighttime temperatures drop below 55°F, pollen fails to develop and flowers that open the following morning will not set fruit. Cool nights often interfere with fruit set for early tomatoes and in higher elevations. Blossom set sprays help set fruit even with cool nights.

If the daytime temperature reaches 90°F by 10 a.m., blossoms that opened that morning abort. Blossom set sprays are not effective under high temperatures.

In July and August along the Colorado Front Range, night temperatures have a 50/50 probability of staying above 55°F any given night. In unusually warm seasons, tomato fruit set may be unusually high. When poor soil conditions and/or watering problems limit plant growth potential, fruit may ripen while small. With good soil tilth and water conditions, fruit size may be unusually large.

## Garden Sanitation

Control weeds. Common weeds harbor many garden insect and disease problems. Volunteer potatoes and tomatoes could be a source of Early Blight infection. [Figure 8]

For Early Blight management, some references suggest removing lower leaves showing symptoms. Symptoms start as tiny black spots on lower leaves. Spots enlarge to light and dark target-like rings. Leaves yellow and the disease progresses from lower leaves up the plant.

If removing lower leaves, focus on leaves with the tiny black spots. Removing just the lower yellow leaves will not be adequate. Wash hands with soap and water immediately after touching diseased leaves to prevent spreading spores to other plants. Avoid working with the plants when they are wet.

Another disease, tobacco mosaic virus (TMV) can readily spread from tobacco smoke residues on the hands and clothing to tomatoes. Prevent TMV infections by washing hands after smoking or handling tobacco products.



Figure 8. Early blight leaf spots [Photo: USDA]

## **Rotation**

Since the common tomato diseases (Early Blight, Verticillium and Fusarium wilt) are soil borne, crop rotation is an effective management tool. However, this may not be practical in most home garden situations, particularly since rotation allows no tomatoes, peppers, potatoes, eggplants, vine crops (cucumbers, squash, pumpkins, and melons), strawberries, or raspberries in the same growing area for at least four years. In a garden bed, moving the tomatoes a few rows to the left or right is not an effective rotation.

## **Fall Clean Up**

Remove all tomatoes and potato debris in the fall. Dispose of debris in municipal trash or by burial. Do not compost unless the compost heats to at least 145°F and the pile is turned occasionally. Most home compost piles do not heat adequately to kill pathogens.

## **Common Disorders**

- CSU Extension fact sheet #2.949, **Recognizing Tomato Problems**

Figure 9. Blossom end rot on tomato is caused by water imbalance between the fruit and soil. The soil could be too wet, too dry, or root could be cut by cultivation. It could be aggravated by soil compaction and poor soil preparation.



## **Ripening Fruit at the End of the Season**

To speed fruit ripening in the fall, hold back slightly on watering.

## **Ripening Fruit Indoors**

With the forecast of a light frost, tomatoes may be protected by covering. If heavy frost is forecast and covering is not practical, harvest fruit before the frost event and carry indoors.

Pick ripening fruit and green tomatoes with a glossy green appearance that have reached about three-fourths of their full size. Remove stems. Wash fruit under a stream of water and allow to air dry on a clean towel. Save only blemish-free fruits for ripening indoors.

As for humidity, fruit shrivel if it is too low. If the humidity is too high, fruit mold. A gardener will have to learn by trial and error what works for their home. Some gardeners simply hang the whole plant upside down in a dark cool barn or basement to let the fruits ripen gradually. In Colorado's dry climate, fruit tend to shrivel from the low humidity.

Other options include placing tomatoes, one or two layers deep, in a covered box for ripening. Some people find better success by individually wrapping fruit in newspaper or wax paper and placing them in a covered box. Placing a few fruit together in a vegetable storage bag has been effective for others. For higher humidity, place tomatoes up to two layers deep in a blanching pan or strainer inside of a covered pan with some water in the bottom. Make sure the fruit does not touch the water.

Ethylene gas produced by ripening tomatoes is a ripening hormone. To speed the ripening process, place a ripe tomato in the container with the fruit. To slow the ripening of green tomatoes, routinely remove ripening fruit from the container.

Green fruit will ripen in about two weeks at 65°F to 70°F, and in about three to four weeks at 55°F. Storage below 50°F will give fruit a bland, off-flavor. Ripe tomatoes may be stored in the refrigerator for a few days.

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Authors: David Whiting (CSU Extension, retired), with Carol O'Meara (CSU Extension, Boulder County), and Carl Wilson (CSU Extension, retired). Artwork by David Whiting; used by permission.

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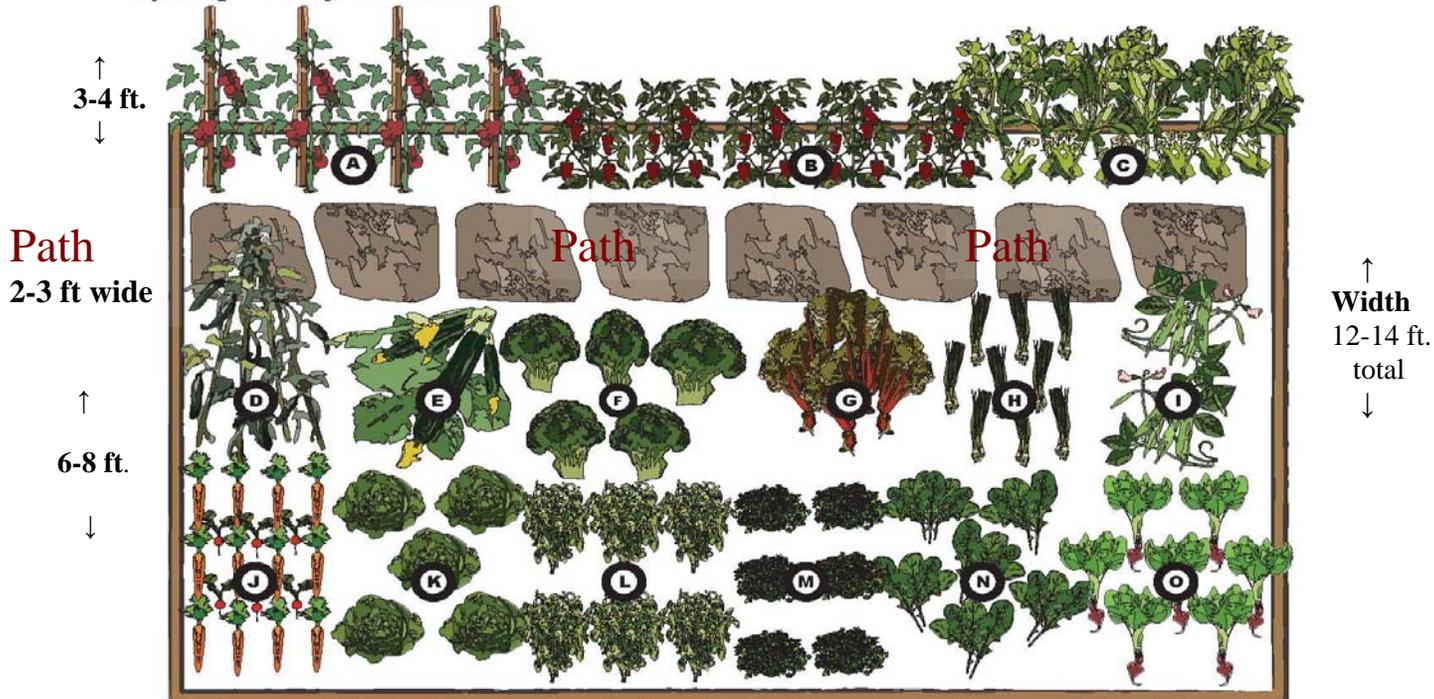
# Short Summer, Cold Winter Garden (USDA zones 3-6 and colder areas of zone 7)

Please Read Seed Packet Backs for Specific Planting and Harvesting Information

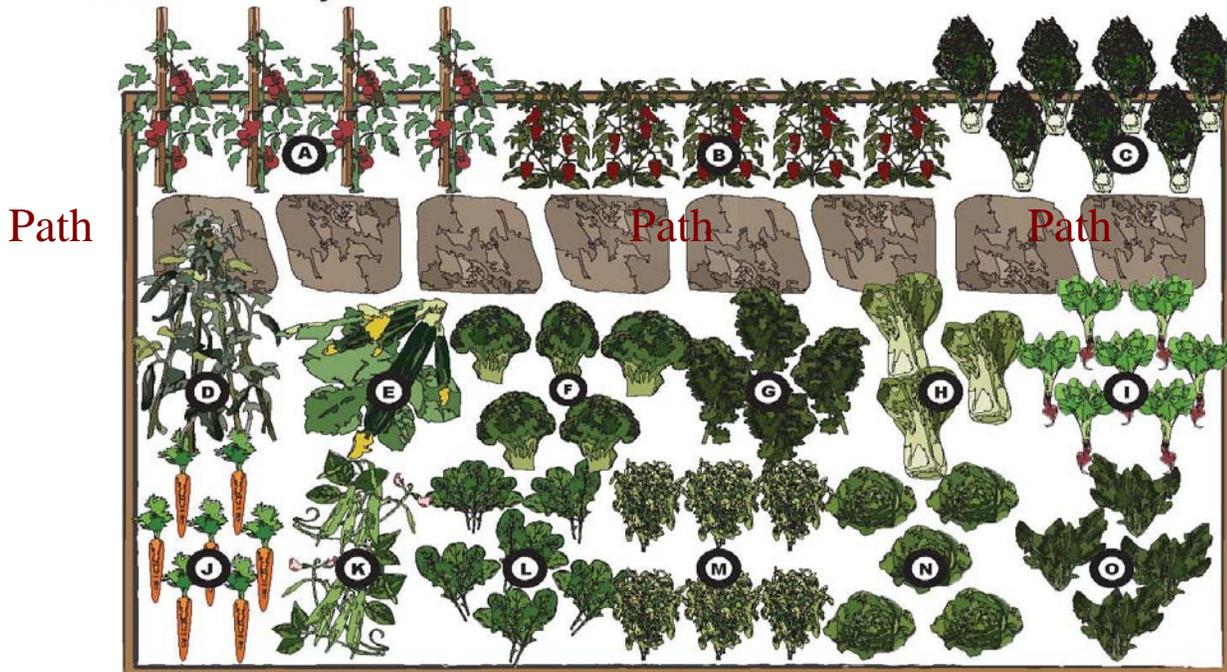
To order Renee's seed varieties for this garden, [Click Here](#)

← Length: 18 - 20 feet minimum (longer if you want a bigger garden) →

## Spring - Early Summer



## Midsummer - Early Fall



## **Plant in Spring-Early Summer: crops in the garden all of the growing season**

**A - Tomatoes:** Start seeds early indoors 5-6 weeks before last frost date. Transplant stocky seedlings into garden in late May to early June, waiting until nights stay securely above 50°.

**Use:** Any Renee's Garden tomato variety

**B - Sweet Peppers or Chile Peppers:** Start seeds early indoors 5-6 weeks before last frost date. Transplant stocky seedlings into garden in late May to early June, waiting until nights stay securely above 50°.

**Use:** Any Renee's Garden sweet pepper or chile pepper

**D - Cucumbers:** Direct sow seeds into the garden when weather becomes warm and nights when nights stay securely above 50°.

**Use:** Any Renee's Garden cucumber

**E - Summer Squash, including Zucchini:** Direct sow seeds into the garden when weather becomes warm and night temperatures stay securely above 50°.

**Use:** Any Renee's Garden summer squash

**F - Broccoli:** Direct sow seeds in the garden in late May and again in mid July or transplant seedlings previously started indoors. Continue to feed and water for continued harvest of side shoots.

**Use:** Long Harvest Broccoli 'All Seasons Blend'

## **Plant Early Spring to Mid-Summer: crops in the garden mid-April to mid-July**

**C - Peas:** Direct sow seeds into the garden in the garden in early spring as soon as the soil can be worked.

**Use:** Any Renee's Garden pea variety

**G - Chard:** Direct sow seeds into the garden in late April to mid May, when the soil starts to warm.

**Use:** Any Renee's Garden chard variety

**H - Scallions:** Direct sow seeds in the garden in late April to mid May when the soil begins to warm.

**Use:** Salad Scallions 'Delicious Duo'

**I - Bush Beans:** Direct sow into the garden in May, when nights stay securely above 50°.

**Use:** Any Renee's Garden bush bean variety

**J - Carrots and Radishes:** Direct sow seeds in the garden in late April to mid May when the soil begins to warm. Direct sow radishes into the garden from late April to mid May interplanting among rows of carrots to maximize space. Radishes mature much earlier than carrots. Pull them as they become mature to give carrots room to grow.

**Use:** Any Renee's Garden carrot and radish variety

**K - Lettuce and/or Mesclun Mixes:** Direct sow seeds into the garden in early spring as soon as soil can be worked.

**Use:** Any Renee's Garden lettuce and/or mesclun mix

**L - Basil:** Direct seed into the garden in late May after soil warms up, or transplant seedlings previously started indoors.

**Use:** Any Renee's Garden basil variety

**M - Cilantro:** Direct sow seeds into the garden in May after soil warms up. Sow every few weeks to insure harvest throughout the summer.

**Use:** Cilantro 'Slow-Bolt'

**N - Arugula:** Direct sow into the garden in early May when soil starts to warm.

**Use:** Kitchen Herbs 'Italian Arugula', 'Runway Arugula' and/or 'Rustic Arugula'

**O - Beets:** Direct sow seeds into the garden in late April to mid May when the soil begins to warm.

**Use:** Any Renee's Garden beet variety

## **Plant Mid-Summer to early Fall: crops in the garden from mid July to frost**

- C - Bulbing Fennel** - Replace peas with bulbing fennel. Direct sow seeds into the garden by mid-July.  
**Use:** Fennel 'Trieste'
- G - Kale:** Replace chard with kale. Direct sow seeds by mid-August. Seeds may be started indoors and Transplanted.  
**Use:** Italian Heirloom Kale 'Lacinato'
- H - Stirfry Mix or Pak Choi:** Replace scallions with Pak Choi or Stirfry Mix. Direct sow by mid-August.  
**Use:** Baby Pak Choi 'Green Fortune', 'Renee's Stirfry Mix'
- I - Beets:** Replace bush beans with beets. Direct sow seeds into the garden by mid-July.  
**Use:** Any Renee's Garden beet variety
- J - Carrots:** After summer carrots have been harvested, another crop may be sown by mid-July. Later sown carrots will mature in fall and become sweeter when they are touched by the first frost.  
**Use:** Any Renee's Garden carrot variety
- K - Bush beans** - Replace lettuce with bush beans in mid summer. Direct sow seed into the garden by mid-July.  
**Use:** Any Renee's Garden bush bean variety
- L - Arugula:** Replace Basil with Arugula. Direct sow seeds into the garden by mid-August.  
**Use:** Kitchen Herbs 'Italian Arugula', 'Runway Arugula' and/or 'Rustic Arugula'
- M - Basil** - replace cilantro with basil. Direct sow seeds by mid-July or transplant seedlings started indoors.  
**Use:** Any Renee's Garden basil variety
- N - Lettuce and/or Mesclun Mixes:** Replace arugula with lettuce and/or mesclun mixes. Direct sow lettuce into the garden for fall harvest by mid-August.  
**Use:** Any Renee's Garden lettuce variety and/or mesclun mix
- O - Spinach:** Replace beets with spinach. Direct sow seeds into the garden by mid-August for a cool weather crop.  
**Use:** Any Renee's Garden spinach variety

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