



## Cool Season Vegetables

Spring and fall vegetables are also known as cool-season vegetables and they are the varieties of vegetables that we grow during those cooler seasons. Some of them do not live through winter and they often peter out in the summer. For each vegetable, we have included important growing and harvesting tips, best times to plant, preferred soil pH, and good companion plants.

### Light

Sunlight, at least 8 hours or more a day is necessary for good production and yields. Lettuces and greens can grow well in somewhat less sun but still need at least 5-6 hours of good direct sun.

### Good Soil

Well-amended, loose soil that is high in organic matter and drains well is best for vegetables. Raised beds and containers are a great way to provide this because you have optimum control over soil quality. Fill your raised beds with topsoil and compost blends, preferably organic, such as Daddy Pete's Raised Bed Mix. This mix is also good for container plantings as is our Homewood Professional Potting Mix.

If you want to plant in the ground and you have heavy clay, it is beneficial to amend the soil with plenty of pine bark soil conditioner or Permatill as well as compost. Layer 2-3" of pine bark soil conditioner or Permatill and 2" compost or aged manure over the top of the areas to be planted and till in amendments to at least 6-8 inches or more (up to 10") deep until thoroughly incorporated. **IMPORTANT:** Tilling the soil is recommended only for initial soil preparation in heavy, clay soils. Soil with adequate or sufficient drainage and structure do not need to be tilled. Annual tilling is NOT recommended and it can destroy the soil structure over time, reduce drainage and root penetration over time, and disrupt or destroy populations of beneficial bacteria and earthworms.

Another note about planting in the ground, most soils in our region are acidic to one degree or another, while most vegetables prefer neutral to slightly alkaline conditions. You can test the pH of your soil as well as gather important information about it by getting a soil test kit from Homewood or the NCDA office in Raleigh. Wood ash (applied in fall) or lime applied 3 months before planting can help raise soil pH to optimum conditions.

### Garden Size

How big should your vegetable garden be? 40 square feet of growing space is probably enough for most home gardeners to keep up with and is enough space to grow a lot of food. If you're very busy, consider only planting half that amount of space. If you're a beginner, it's best to start small, learn the basics, and expand when you're ready. You can always make the garden bigger the next year.

If you are planting in raised beds, three feet is usually the ideal width for a raised bed as it reduces the strain of reaching. If your beds are against a fence or wall, then two feet wide will allow you to get to all areas in spite of only being able to work from one side.

### Water

Regular water is vital for vegetables. One of the first things a drought-stressed plant sacrifices is its fruit. Quality of fruit (and by "fruit" we mean any fruit produced by the plant regardless of whether it is considered to be a fruit or a vegetable) is also negatively affected by drought stress. Drip irrigation makes it easier and more efficient to water. Consider rain capturing devices like rain barrels and cisterns for water conservation and because plants usually do better with rainwater than municipal water.

### Fertilizer

Regular applications of organic fertilizers such as Garden-tone will provide best yields. Always apply fertilizer at the rate indicated on the package. Fish and seaweed emulsions are also great for boosting production.

### Mulch

Mulch is extremely important in vegetable gardens (and most gardens). It helps conserve moisture in the soil, important for retaining quality of vegetables, as well as keeping dirt and soil-borne disease off of plants, reducing weed problems, protecting roots from heat and cold, and improving soil as it decomposes. Many types of mulch may be used and many vegetable gardeners favor

shredded leaves or wheat straw/hay as mulch in their gardens. Pine needles, bark/wood chips, grass clippings, and compost may also be used. Between rows or beds you can also lay down layers of newspaper or cardboard and top with mulch (or not) to keep down weeds.

## Tips

- A soil test is recommended prior to planting in the ground to determine if any deficiencies exist or if the pH of the soil needs to be altered. Most soils in our region are acidic to one degree or another, while most vegetables prefer neutral to slightly alkaline conditions. You can get a soil test kit at Homewood or from the NCDA office.
- Organic pest control is safest for edible crops. A basic cupboard of remedies includes Organocide organic spray oil or insecticidal soap for sucking insects like aphids and thrips, Mite-X for spider mites, and spinosad for Bt for caterpillars. ALWAYS read the label and observe any restrictions or precautions for applying, handling, and disposing of pesticides. (The label is the law.) Even though a product is organic, it does not mean there aren't important precautions or that it is not poisonous. For example, Organocide spray oil is a very safe product to use around people and pets but it can stain concrete.
- Grow plants around or within the vegetable garden such as basil, catmint, dill, oregano, coneflower, cosmos, salvia, and zinnia, to attract beneficial insects to the garden. Beneficial insects either assist in pollination or are predator insects that will hunt pest insects in your garden.
- Consider fencing your garden to keep out deer, rabbits, and other pests. Repellents such as imustgarden's Deer Repellent and Rabbit Repellent can help keep these pests at bay. Deer do not like the scent of rosemary and lavender so try interplanting them or surrounding veggie beds with them along with pollinator plants.
- Furrow: a long, narrow trench usually made by a plow
- Worms are your friends (and your garden's). Their castings are nutrient rich and improve soil structure as do their channels. Encourage them by incorporating or top-dressing with compost, using organic mulches (vs plastic), and avoid tilling beyond the initial bed preparation.
- Organic fertilizer, such as Garden-tone, and compost as well as compost tea will feed plants AND beneficial soil microorganisms to build a healthy soil that supports good plant growth and more resilient plants.

**There are a two ways to grow: by seed or by purchased plants. Some crops need to be directly sown by seed into the garden and some can be started indoors in seeding trays. Many plants can be started by seed either indoors or outdoors. Also, many can be planted by transplanting purchased plants. Some plants, especially root crops like carrots, beets, and radishes cannot be set out as transplants and must be planted by seed.**

**Bok choy/Pak choy** - Tolerates part sun. Transplants can be planted from March 1-April 1 and will be ready for harvest between mid-April and mid-May, or planted for fall crops in early to mid August to Oct. 1st for October to December harvests. Plant in well-drained soil with plenty of organic matter or raised beds mixing in fertilizer prior to planting. Keep watered during dry spells, especially in fall. Once your plant reaches 12-18 inches tall and the base of each stem is at least a half-inch you can begin harvesting leaves as you need them. Harvest tender leaves and stems from the outside of the plant and work your way in. Since you can continually harvest from the same plant you do not need to plant successive crops but unless you prefer to harvest it all at once and have another crop after. Pests: flea beetles, cabbage worms, slugs, weevil larvae, cutworms, aphids

**Beets** - Easy to grow and matures quickly. Direct sow beets in spring as soon as the hard freezes have finished (usually late February), and in early September for a fall crop. Needs a loose, loamy soil to produce well-formed vegetables. Work the soil deeply, adding compost and soil conditioner such as pine bark fines or Permatill. Or grow in raised beds turning the soil before planting. Work in fertilizer prior to sowing then make shallow furrows (12" apart if more than one) on the bed. Plant seed 1/2 to 1 inch deep and 1/2 to 1 inch apart. After sprouting, thin to 6 plants per foot. Fertilize every 3-4 weeks with organic, low-nitrogen fertilizer. The green tops can be cooked and eaten as well (best when they are small thinnings up to 6 inches tall.) For best texture, harvest when beets are about 2-3 inches across (or smaller), or before a hard freeze in fall. Preferred pH: 6.5-7.5 Good companions: cabbage family, leek, lettuce, onion, radish. Pests: root nematodes, aphids, flea beetles, leaf miners, beet web worms.

**Broccoli** - Best in raised beds or raised rows. Set plants about 18 inches apart. After planting top dress (seeds) or side dress (transplants) with Garden-tone fertilizer or compost. Sow indoors 6-8 weeks before last frost. If planted in spring, harvest when the weather is cool and the heads are still tight. Prime time is usually April. Immerse spring harvested broccoli heads in an ice bath after cutting for 10-15 minutes, shake dry, and refrigerate immediately. Consume within several days and freeze the rest as broccoli freezes very well. After cutting the main heads, side-dress the crop with more fertilizer to help force new side shoots for continued harvest. Preferred pH: 6.5-7.5. Good companions: Beet, carrot, potato, spinach. Pests to watch for: cabbage worms aka cabbage loopers, flea beetles.

**Brussels Sprouts** - Best for fall planting only as spring plantings tend to produce tough sprouts in the South. Irrigation whether automatic or by hand is highly recommended. Start seeds in early July or transplants in mid-August. Plant 18 inches apart in well-tilled and amended furrows mixing in fertilizer to the individual planting holes. Sprouts will mature on the stem from the bottom up. Rotate crops every three years with non-cabbage family plants. Harvest when the sprouts are about 1 inch in size, either harvesting as they mature or cutting the whole stalk at once. (If harvesting individually, snap the leaf below the sprout off, as well, to

keep the plant from trying to produce new sprouts which will pull energy from the existing sprouts.) Best quality is usually had at the time of first frost, as frost makes many fall vegetable sweeter and more flavorful. The sprout tops are edible, too (sauté, steam and puree with butter and spices). Preferred pH: 6.0-6.8. Good companions: beets, carrots, lettuce, onions, peas, potatoes, spinach, radishes. Pests: aphids, flea beetles, cabbage worms.

**Cabbage** - Choose early-maturing varieties. Does well as a spring or fall crop. Can be planted as late as October for an early spring crop as cabbage is very cold hardy. Plant in deeply tilled furrows or raised beds adding compost. Furrows are recommended for overwintered crops to give extra protection from the cold. Cabbage won't tolerate prolonged wet soil in winter so the soil should drain well. Can be sown indoors 6 weeks before setting out in spring or planted as transplants. Set transplants 12-18" apart and plant around the second week of March for spring crops and the second week or so of September for fall crops. Work some fertilizer or compost into each planting hole. Use row covers to keep pests off plants. Needs a steady supply of water during the growing season. Rotate crops every three years with non-cabbage family plants. Preferred pH: 6.0-7.5. Good companions: beet, carrot, lettuce, onion, potato. Pests: aphids, cabbage worms, flea beetles.

**Cauliflower** - Less easy to grow than broccoli or cabbage, and not as heat tolerant or cold hardy. Can be sown indoors 4-6 weeks before last frost, or set out as transplants (generally. Spring planting tends to be more successful than fall plantings, and when planting in fall try to get the plants in the ground no later than the first of September. See our notes for growing broccoli and cabbage as cultivation is virtually the same for cauliflower. When the heads first appear, carefully pull the top leaves over the head and staple them together with a toothpick or small twig. This helps keep the head white and prevent scorching. Avoid drought stress and be sure when plants are young and when they are maturing. Cut the heads as soon as they are developed and while the "curds" are still tight. Leave some leaves on the stem to prevent the heads from drying out. Ice bath cut heads as described in the broccoli section. Rotate crops every three years with non-cabbage family plants. Preferred pH: 6.5-7.5. Good companions: beets, carrots, lettuce, onions, peas, potatoes, spinach. Pests: flea beetles, cabbage worms.

**Collards AND Kale, aka Southern Greens** - Can be grown from seed or set out as transplants. Will grow in lesser quality soils than preferred by cabbages. Best planted around the second week of March or mid-August. First frost produces leaves of superior flavor making them sweeter and more tender. Kale is somewhat more hardy than collards. Fall crops may remain in the garden over winter for a quick spring crop, if desired. Ideally, plant in raised beds in the spring and furrows in the fall. Set transplants about 12-18 inches apart working some fertilizer into each planting hole. High nitrogen fertilizer applied midway through development will keep collard leaves heavy and growing rapidly. Harvest kale by letting the whole plant reach a good size and taking all of it or by removing the desired amount of outer leaves for a meal. Rotate crops every three years with non-cabbage family plants. Preferred pH: 6.0-7.0. Companion plants: beets, lettuce, onions, potatoes. Pests: cabbage worm, aphids.

**Garlic** - Likes full sun and fertile, well-drained soil. Plant cloves in October or November 1 inch deep and about 5 inches apart with pointed end up. Top with soil and cover with mulch (if any tops that sprout look like the mulch is holding them down, pull away the mulch over that spot.) For hardneck varieties, prune off the scapes (flower stalks) in late spring (these are delicious stir-fried or in pesto). Harvest in May or June when the bottom third of the leaves are brown and the top 4 to 8 leaves are still green. Cure the garlic by hanging them up or by laying them in a shaded, airy space protected from rain for at least a month (or when the skins are dry and the necks are tight). Once dry, trim tops and roots. Preferred pH: 6.0. Good companions: beet, lettuce

**Lettuce** - Can be grown from seed or set out as transplants. Butterhead/looseleaf lettuces are most commonly grown because they are the least temperamental and fastest to mature. Butterhead lettuces have a tighter rosette of leaves than looseleaf but do not form a true head like Iceberg. Iceberg types take much longer to mature and are more fussy about soil conditions and less tolerant of temperature extremes. Romaine tolerate warm weather better and are less likely to bolt. Lettuce is a good crop for succession planting.

To have a continuous supply of lettuce over the season, make successive plantings every 10-14 days once the season begins. Plant 10-16 inches apart in raised beds/rows or furrows giving more space for larger varieties. Fertilize prior to planting and, for Iceberg lettuce, again midway through development. The key to good production is rapid growth (apply fertilizer or compost regularly) and plenty of water especially later in the spring season. Harvest early in the day while still cool, before the sun hits the plants, and harvest all plants before the weather turns hot rendering them bitter. Young leaves usually have the best flavor. Harvest outer leaves first. When the central stem start to form, the harvest is over. After cutting, immerse harvested plants in an ice bath for 10-15 minutes, dry thoroughly, place in plastic bags, and refrigerate immediately. Preferred pH: 6.5-7.0. Companion plants: cauliflower, collards, kale, Swiss chard. Pests: few except rabbits

**Kale, see Collards.**

**Kohlrabi** - Fast-maturing (about 45 days) in the garden. Tolerates light shade. Most commonly grown as a spring crop in the South since warm weather can produce tough and bitter stems. Can be sown indoors 6 weeks before setting out in spring or planted as transplants as soon as hard freezes have passed. Set transplants 12-18" apart and plant around the second week of March for spring crops. Plant fall crops in late September making sure to irrigate in dry weather. Steady moisture is important for tender crops. Work some fertilizer and compost into each planting hole. Use row covers to keep pests off plants. Needs a steady supply of water and nutrients during the growing season. Fertilize every 2-3 weeks with complete organic fertilizer or fish emulsion. Side-dressing with compost or leaf mold is beneficial. Leaves can be harvested for salads. Harvest the bulbous stem when it is about 2-3 inches across cutting between the globe and the root. Rotate crops every three years with non-cabbage family plants. Preferred pH: 6.0-7.0. Good companions: beet, lettuce, onion, potato. Pests: aphids, cabbage worms, flea beetles.

**Onion** - These are typically grown from “sets”, small onion bulbs, typically available for planting in mid-September and grown over winter and spring to be harvested in early summer. The second best time to plant is mid-February for June harvest. Require rich, loamy soil to produce big bulbs. Heavy clay soil will result in skinny, elongated onions. incorporate fertilizer into the soil prior to planting and plant in rows 1 foot apart (2” apart for green onions) just deep enough to accommodate the sets (About half of the bulb on finished onions will be above ground at harvest.) When plants begin to grow rapidly, side dress with another application of fertilizer. Pinch off flowers stalks to help direct energy to the bulb. Harvest any time the bulbs become large. Once the leaves begin to break and fall over, it is time for final harvest. Dig onions out when the weather is dry, spread out on newspapers, and leave them outside to cure in the sun until they are thoroughly dry and the skin is like paper. (Move them under a porch or into the garage if rain is called for.) Do not wash onions to remove dirt. Store away from tomatoes and apples. Garlic and shallots can be grown in similar fashion. Preferred pH: 6.0-7.5. Good companions: beet, cabbage family, carrot, early lettuce, parsnip, spinach, turnip. Pests: few

**Peas (Sugar/Snap peas, snow peas, and garden/English peas)** - Peas need to be planted early (late January/early Feb. Last planting by mid-March) but can be slow to germinate in cold soil. Use black plastic mulch to warm the soil before planting or pre-sprout the seed peas by soaking overnight and keeping them in moist paper towels or sprouting jars until the roots emerge then plant right away. Apply pea inoculant, a beneficial bacteria that helps them fix nitrogen, to the seed peas then sow 1 inch deep and 1-2 inches apart in double rows with a vine support between the rows. Best grown in raised beds, mounded rows, or large containers. Use fertilizer low in nitrogen or just compost. Garden peas and sugar snaps are of the best quality when they are fully expanded but immature, before they become hard and starchy. Snow peas should be harvested when the pods are still flat. Pick garden peas immediately before you plant to shell and cook them – their quality and sweetness deteriorates rapidly. Preferred pH: 6.0-6.5. Good companion plants: early potato, radish, spinach, turnip. Pests: few but avoid touching damp plants to prevent spread of fungal disease.

**Potatoes (Irish)** - Tolerates partial shade. 1-3 weeks before planting (mid Feb), spread seed potatoes in a single layer in a warm room with bright, indirect light to stimulate the growth buds (“eyes”). The day before planting, cut large seed potatoes in pieces no smaller than an egg, with at least 2 eyes. After 1 day, dust with agricultural sulfur to stave off diseases and beetles. Plant these sets and your small seed potatoes about 10”-12” apart as soon as the hardest freezes of winter are past (usually early March when daffodils are in full bloom) in loose soil (raised beds or ridges are suggested, or containers/grow bags). You can also plant in 3” deep trenches and rake up soil or mulch around the plants as they grow beginning with about an inch of soil or mulch and working up to 6 inches. Work fertilizer into the soil prior to planting. Harvest when the tubers have reached desirable size up until when the vines begin to die and before the ground freezes. “New” potatoes are usually ready a couple months after planting. When harvesting, shake off excess soil but do not wash before the skin toughens. Spread the potatoes on dry newspaper in a dark place for a week. Then wash, dry, and store in a cool, dry place that stays about 4-50 degrees, if possible. Preferred pH: 5.0 - 6.5. Good companion plants: Parsnip, pea, cabbage family. Pests: Many - Colorado potato beetle, flea beetles, leaf hoppers, and aphids. Do not rotate with tomatoes.

**Radish** - Very easy to grow and only 3 to 5 weeks to harvest time. Best in raised beds or rows where soil will be loose and friable. Direct sow the seed outdoors in short rows about a week apart for successive harvests. Plant in late winter as soon as the hardest freezes have passed (late Feb.) Plant fall radishes in September for October and early November harvest. Can be planted between longer-maturing crops such as broccoli and onion to save space. Work fertilizer into the soil before planting, and plant seed thickly about 1/2 inch deep. After the seeds are up and growing, thin plants to about 3 inches apart. Even moisture and good fertility are important for rapid growth and best quality. Harvest as soon as the radishes are about an inch or 1.5” in diameter. If weather is warm at harvest, give the radishes an ice bath before refrigerating them. Preferred pH: 6.0-7.0. Good companion plants: lettuce, pea, beet, parsnip, pea, spinach. Pests: few

**Swiss Chard** - Chard is not only a spring and fall vegetable but often can produce through summer, though you may need to remove the ribs before cooking or eating during the summer months. Will tolerate light shade. Can be sown by seed or set out as transplants. Indoor sow: 1-2 weeks before the last frost (usually the end of March). Direct sow: after last frost (mid April). Transplant in late March, and again in early August. Space 4-5 inches apart if you plan to harvest plants all at once, or plant 8-10 inches apart if you want to harvest the outer leaves over a prolonged period of time. The secret to good production is to grow it quickly which means regular fertilizer or a continuously maintained layer of compost on the soil. Pick outer leaves as needed when they are over 6 inches long, or clip tender young leaves for salads. Leave the center of the plant intact for prolonged harvest. After cutting, immerse harvested plants in an ice bath for 10-15 minutes, dry thoroughly, place in plastic bags, and refrigerate immediately. Can also be blanched and frozen for longer storage. Preferred pH: 6.0-7.0. Companion plants: cabbage family, legumes, lettuce

**Spinach** - Can be grown from seed or set out as transplants. Sow indoors 3-4 weeks before last frost (about late Feb or early March) or in mid July to plant in mid August. Grow in raised beds or furrows, and plant as early as possible after the hardest freezes have past (usually March). Likes plenty of water and high fertility. Incorporate fertilizer or compost at planting and side dress again with it during the season. To harvest, cut the outermost leaves first allowing the center of the plant to continue to produce. Smaller, younger leaves can also be cut for salads. Preferred pH: 6.5-7.5. Good companions: onions, peas. Pests: powdery mildew.

**References:** *Gardening in the South: Vegetables and Fruits* by Don Hastings, *Vegetable Gardening in the Southeast* by Ira Wallace, *The Vegetable Gardener’s Bible* by Edward Smith.