

# CARE GUIDE:

## Cool Season Vegetables



Spring and fall vegetables are also called cool season vegetables. Many don't live past winter, and others die by summer. Read on for growing and harvesting tips, planting times, preferred soil pH, and companion plants.

### GARDEN SIZE

Forty square feet of growing space will produce an abundance of vegetables. If your time is limited, consider using only half this space. If planting your first vegetable garden, it's best to start small, in order to learn the basics, and then expand when you're ready. If planting in raised beds, a width of 3' allows for easy reaching. For beds against a wall or fence, 2' wide will be optimal, since only three sides are accessible.

### LIGHT

At least 8 hours of sunlight a day are needed to produce good yields. Lettuces and greens can grow well with less light, but they will need at least 5-6 hours of direct sun.

### SOIL

Vegetables thrive in rich, loose soil that is high in organic matter and well drained. Containers and raised beds provide optimum control over soil quality, allowing you to meet all these conditions. Fill raised beds with topsoil and a compost blend, preferably organic, such as Daddy Pete's Raised Bed Mix.

If soil is heavy clay, amendments will be beneficial. Put down 2-3" of a pine bark soil conditioner or

Permatill and top with 2" of compost or aged manure. Till 6-8" deep or more (up to 10"), to thoroughly incorporate amendments. Note: Tilling is recommended *only* for initial soil preparation in heavy, clay soils. Soils with adequate drainage and structure do not need to be tilled. Annual tilling is *not* recommended. Over time, this practice destroys soil structure, reduces drainage and root penetration, and disrupts or destroys beneficial bacteria and earthworms.

### Garden Soil Tips:

- Most soils in our area are acidic, while vegetables generally prefer neutral to slightly alkaline conditions.
- To increase soil pH, apply wood ash in fall, or lime 3 months before planting.
- A soil test prior to planting will help determine any deficiencies or necessary pH alterations. Soil test kits are available from Homewood Nursery and the NCDA office in Raleigh.

### WATER

Regular water is vital to vegetable plants. Drought-stressed plants first sacrifice fruit (any fruit produced, whether considered a vegetable or a fruit). Drought stress also negatively affects fruit quality. Use drip irrigation for easier and more efficient watering. Also consider rain barrels or cisterns for water conservation. Plants usually prefer rainwater.

### FERTILIZER

Regular application of an organic fertilizer like Garden-tone increases yields. Always apply as indicated on the package. Fish and seaweed emulsions are great for boosting vegetable production, as well.

### MULCH

Mulch is extremely important. It conserves soil moisture, protects roots from heat and cold, protects plants soil-borne diseases, deters weeds, and improves soil quality as it breaks down. There are a variety of mulches available. Some gardeners prefer shredded leaves, wheat straw, or hay. Pine needles, bark or wood chips, grass clippings, and compost can also be used. Layers of cardboard or newspaper topped with mulch will deter weeds between rows or beds.

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STARTING FROM SEED OR

Growing Veggie Plants

WITH PURCHASED PLANTS

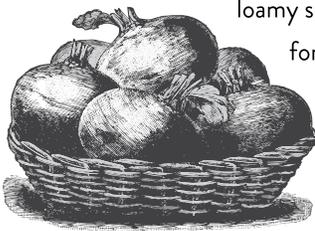
Some vegetables need to be sown directly into the ground by seed. Others can be started indoors in trays. Many can be started by seed indoors or outdoors.

success with many popular cool season vegetables.

**BOK CHOI / PAK CHOY** - Tolerates part sun. Transplants can be planted from March 1-April 1 for harvesting between mid-April and mid-May, or planted in early to mid-August to October 1 for harvesting from October to December. Plant in well-drained soil with plenty of organic matter, or in raised beds. Mix in fertilizer prior to planting. Keep watered during dry spells, especially in fall. When plants reach 12-18" 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. For continual harvest, successive plantings are not needed, unless you will harvest all at once, and want another crop. Pests: Slugs, flea beetles, cutworms, cabbage worms, weevil larvae, aphids.

**BEETS** - Easy to grow; mature quickly. Direct sow in spring, after threat of hard freeze passes (usually late February), or in early September for a fall crop. Loose,

loamy soil is needed for beets to be well-formed. Work soil deeply. Add compost



and soil conditioner, like pine bark fines or Permatill. For raised beds, turn soil before planting. Work in fertilizer. Make shallow furrows 12" apart. Plant seeds 1/2-1" deep and 1/2-1" apart. After sprouting, thin to 6

plants per foot. Fertilize every 3-4 weeks with a low-nitrogen organic product. Green tops can be cooked and eaten (best up to 6" tall). Harvest when about 2-3" across (or smaller), or before a hard freeze. Preferred pH: 6.5-7.5. Companions: Leek, lettuce, onion, radish, cabbage family. Pests: Root nematodes, aphids, flea beetles, beet web worms, leaf miners.

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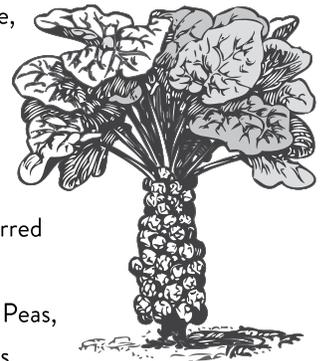
Vegetables

COOL SEASON

**BROCCOLI** - Best in raised beds or raised rows. Set plants about 18" 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 planting in spring, harvest when weather is cool and heads are still tight. Prime time is April. After harvesting broccoli heads, immerse in an ice bath for 10-15 minutes, shake dry, and refrigerate immediately. Use within several days and freeze the rest (broccoli freezes well). After cutting the main heads, side-dress the crop with more fertilizer to help force new shoots and a continued harvest. Preferred pH: 6.5-7.5. Companions: Carrot, potato, spinach, beet. Pests: Cabbage worms (cabbage loopers) and flea beetles.

Root vegetables like carrots, beets, and radishes must be planted by seed. Following is information for

**BRUSSELS SPROUTS** - Best planted in fall in the South, as spring plantings can produce tough sprouts. Irrigation (by hand or automatic) is highly recommended. Start seeds in early July, or transplant in mid-August. Plant 18" apart in well-tilled and amended furrows. Mix fertilizer into each planting hole. Sprouts will mature on the stem from the bottom up. Rotate with non-cabbage family plants every three years. Harvest when sprouts are about 1" in size, either harvesting as they mature, or cutting the whole stalk at once. When harvesting an individual sprout, remove the leaf below, as well, to avoid new sprout production, which will divert energy from existing sprouts. Best quality is at the time of first frost. Frost makes many fall vegetables sweeter and more flavorful. Sprout tops are edible, too (sauté, steam, or puree with butter and spices). Preferred pH: 6.0-6.8. Companions: Peas, beets, lettuces, potatoes, onions, carrots, spinach, radishes. Pests: Aphids, flea beetles, cabbage worms.



Brussels Sprouts

**CABBAGE** - Does well as a spring or a fall crop. Choose early-maturing varieties. Very cold hardy. Can be planted as late as October for an early spring crop. Plant in deeply tilled furrows or raised beds, adding

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## COOL SEASON VEGETABLES *(continued)*

compost. Furrows provide extra protection from the cold, and are recommended. Soil should drain well; cabbage doesn't tolerate prolonged wetness. Can be sown indoors 6 weeks before setting out in spring, or transplanted. Plant transplants 12-18" apart, around the second week of March for spring crops, or for fall crops, around the second week of September. Work fertilizer or compost into each planting hole. Row covers will deter pests. A steady supply of water is needed during growing season. Rotate with non-cabbage family plants every three years. Preferred pH: 6.0-7.5.

### Cauliflower



Companions: beet, potato, onion, lettuce, carrot.  
Pests: Cabbage worms, flea beetles, aphids.

**CAULIFLOWER** - Not as easy to grow as 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. Spring planting is more successful than fall planting. For fall plantings, put plants in the ground no later than September 1. See broccoli and cabbage sections; cultivation is virtually the same for cauliflower. When a head first appears, carefully pull top leaves over and hold together with a toothpick or small twig. This keeps the head white, and prevents scorching. Avoid drought stress, and monitor the plants' maturity. Cut heads as soon as developed and "curds" are still tight. Leave some leaves on the stem to prevent heads from drying out. Ice bath cut heads

as described in the broccoli section. Rotate with non-cabbage family plants every three years. Preferred pH: 6.5-7.5. Companions: carrots, lettuce, onions, beets, peas, potatoes, spinach. Pests: Flea beetles, cabbage worms.

### **COLLARDS AND KALE** -

Can be grown from seed or transplants. Tolerate lesser quality soils than cabbage. Best planted around the second week of March or mid-August. First frost produces leaves sweeter and more tender leaves. Kale is somewhat more hardy than collards. Plant in raised beds in the spring, or furrows in the fall. Let fall crops overwinter for a quick spring crop. Plant transplants about 12-18" apart, working fertilizer into each planting hole. Apply high nitrogen fertilizer midway through development for heavy collard leaves and rapid growth. To harvest kale, let plants reach a good size and harvest, or remove outer leaves only.

Rotate every three years with non-cabbage family plants. Preferred pH: 6.0-7.0.



Garlic

Companions: Lettuce, beets, onions, potatoes. Pests: Aphids, cabbage worm.

**GARLIC** - Likes full sun and fertile, well-drained soil. Plant cloves in October or November 1" deep and about 5" apart, with pointed end up. Top with soil; cover with mulch. If mulch begins holding down any sprouts, pull mulch away from them. For hardneck varieties, prune off scapes (flower stalks) in late spring (delicious stir-fried or in pesto). Harvest in May or June, when the bottom third of the leaves are brown, and the top 4-8 leaves are still green. Cure by hanging or laying in a shaded, airy space protected from rain, for at least a month (or when the skins

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- Organic pest control

### Veggie Gardening Tips:

- is safest for edible crops. Treat sucking insects like aphids and thrips with Organicide spray oil or insecticidal soap; Mite-X controls spider mites; Treat caterpillars with Spinosad and Bt. ALWAYS read labels and observe any instructions for applying, handling, and disposing. Even organic products can have important precautions or be dangerous. For example, Organocide is safe for people and pets, but can stain concrete.
- Organic fertilizer (such as Gardentone), compost, and compost tea feed plants and beneficial microorganisms, and also build healthy soil, supporting growth and resilience.

- Worms castings are nutrient-rich and improve soil

- structure, as do worm channels. Attract worms with compost and organic mulch (not plastic). Avoid tilling after initial soil preparation.
- Grow basil, catmint, dill, oregano, cosmos, coneflower, salvia, and zinnia in or around the garden to attract beneficial insects. These helpers can aid in pollination, and some will even hunt pest insects.
- Consider fencing to keep out rabbits, deer, and other animals. Imustgarden Deer Repellent and Rabbit Repellent can also help. Deer don't like the scent of rosemary or lavender. Interplant or surround vegetable beds with these herbs.

## COOL SEASON VEGETABLES *(continued)*

are dry and the necks are tight). Once dry, trim tops and roots. Preferred pH: 6.0.

Companions: Beets, lettuces.

**KALE** - See Collards.

**KOHLRABI** -

Fast-maturing

(about 45 days). Can

tolerate light shade. Usually

grown as a spring crop in the

South, since warm weather

can produce tough, bitter

stems. May be sown indoors

6 weeks before

setting out in spring. Plant after threat of

hard freezes has passed. Plant transplants

12-18" apart around the second week of

March for spring crops. Plant fall crops in

late September, making sure to irrigate in

dry weather. Work fertilizer and compost

into each planting hole. Use row covers to

deter pests. A steady supply of water and

nutrients are necessary. Fertilize every 2-

3 weeks with organic fertilizer or fish

emulsion. Side-dressing with compost or

leaf mold is also beneficial. Harvest the

bulbous stem when 2-3" across, cutting

between globe and root. Leaves can be

eaten in salads. Rotate with non-cabbage

family plants every three years. Preferred

pH: 6.0-7.0. Companions: Beet, lettuce,

onion, potato. Pests: Aphids, cabbage

worms, flea beetles.

**LETTUCES** - Can be grown from seed or

set out as transplants. Butterhead/loose

leaf lettuces are least temperamental, and

fastest to mature. They have a tighter ro-

sette of leaves than loose leaf varieties, but

don't form a true head. Iceberg types take

much longer to mature, are fussier about

soil conditions, and less tolerant of extreme temperatures. Romaines tolerate warm weather better, and are slower to bolt. Lettuce is a good succession crop.

For a continuous supply, plant every 10-14 days. Plant 10-16" apart in raised beds/rows or fur-

rows, 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, before the sun hits the plants.

Harvest outer leaves first. Young leaves are usually best. Harvest all plants before hot weather renders them bitter. When the central stem start to form, the growing season is over.

After harvesting, immerse in an ice bath for 10-15 minutes, dry thoroughly,

and place in plastic bags. Refrigerate immediately. Preferred pH: 6.5-7.0.

Companions: collards, kale, Swiss chard, cauliflower. Pests: Few, except rabbits.

**ONIONS** - Typically grown from sets (small bulbs), which are usually available about mid-September. Usually grown over winter and spring, and harvested in early summer. The next best time to plant

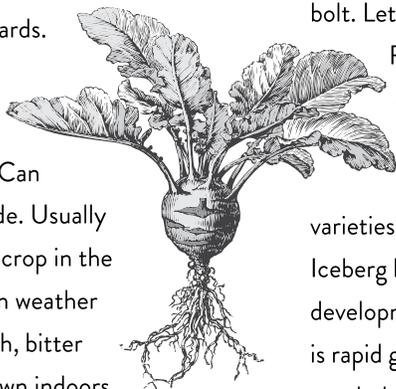
is mid-February for a June harvest. Require rich, loamy soil to produce big bulbs. Heavy clay soil produces elongated onions. Prior to planting, incorporate fertilizer into

soil. Plant in rows 1' apart (2" apart for green onions), just deep enough to cover the sets (at harvest, about half the bulb will be above ground). When plants begin to grow rapidly, Reapply fertilizer.

Pinch off flowers to help direct energy to the bulb. Harvest when bulbs become large. It's time for a final harvest when leaves begin to break and fall over. Dig in dry weather, spread on newspaper, and cure in the sun until thoroughly dry and the skin is like paper. Move to a porch or garage if rain is forecasted. Don't wash to remove dirt. Store away from tomatoes

and apples. Garlic and shallots can be grown in similar fashion. Preferred pH: 6.0-7.5. Companions: Cabbage family, beets, early lettuce, carrot, parsnip, spinach, turnip. Pests: Few.

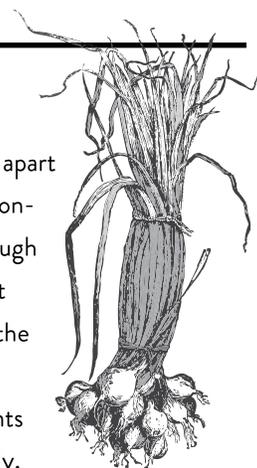
**PEAS** (Sugar/Snap peas, snow peas, and garden/English peas) - Peas must be planted early: late January-early February, with the last planting by mid-March. However, germination can be slow in cold soil. Black plastic can be used to warm soil prior to planting, or try pre-sprouting: soak peas overnight. Keep in moist paper towels or sprouting jars until roots emerge, then plant right away. Apply pea inoculant (a beneficial bacteria that helps fix nitrogen) to the seed peas, then sow 1" deep and 1-2" apart in double rows with a vine support between rows. Best grown in raised beds, mounded rows, or large containers. Use compost or a low



*Kohlrabi*



*Romaine Lettuce*



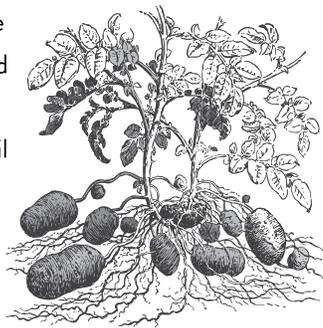
*Onions*

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## COOL SEASON VEGETABLES *(continued)*

nitrogen fertilizer. Garden peas and sugar snaps are best harvested when fully expanded but immature, before hard and starchy. Harvest snow peas when pods are still flat. Pick garden peas just before cooking – their quality and sweetness deteriorate rapidly. Preferred pH: 6.0-6.5. Companions: Early potato, spinach, radish, turnip. Pests: Few. Avoid touching damp plants to prevent fungal diseases.

**POTATOES** (Irish) - Tolerate partial shade. 1-3 weeks before planting (mid-February), spread a single layer of seed potatoes in a warm room with bright, indirect light to stimulate growth buds (eyes). The day before planting, cut the largest into pieces no smaller than an egg, with at least two eyes. The next day, dust with agricultural sulfur to deter beetles and diseases. Plant these sets and smaller seed potatoes about 10-12" apart in loose soil after the hardest freezes of winter are past (usually early March, when daffodils are in



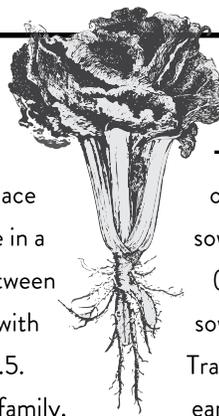
Potatoes

bloom). Raised beds or ridges are best, or containers/grow bags. Potatoes can also be planted in 3" deep trenches. Before planting, work fertilizer into soil. Rake soil or mulch around plants as they grow, starting with about 1" of material, and working up to 6". Harvest at the desired size, up until the vines begin to die, but before the ground freezes. 'New' potatoes can be dug a couple months after planting. At harvest, shake off excess soil, but don't wash until

skins toughen. Spread out on newspaper and leave in a dark place for a week. Wash, dry, and store in a dry place with temperatures between 40-50 degrees. Do not rotate with tomatoes. Preferred pH: 5.0-6.5. Companions: Parsnip, cabbage family, peas. Pests (Many): Colorado potato beetle, flea beetles, leaf hoppers, aphids.

**RADISHES** - Very easy to grow; mature in only 3-5 weeks. Best in raised beds or rows with loose soil. Direct sow outdoors in short rows, Can be repeated about once a week for successive harvests. Plant in late winter, as soon as the hardest freezes have passed (late February). Plant in September for October and early November harvesting. Plant radishes between longer-maturing crops like, broccoli and onions, to save space. Work fertilizer into soil before planting. Plant seeds thickly, about 1/2" deep. After plants are up and growing, thin to about 3" apart. Even moisture and good soil are important for rapid growth and best quality. Harvest radishes when 1-1.5" in diameter. If weather is warm at harvest, give an ice bath before refrigerating. Preferred pH: 6.0-7.0. Companions: Lettuce, pea, beet, parsnip, pea, spinach. Pests: Few.

**SWISS CHARD** - Though considered a spring and fall vegetable, chard will often produce into summer. However, ribs may need to be removed before eating. Will tolerate light shade. Can be sown by seed



Swiss Chard

or set out as transplants. Indoor sowing: 1-2 weeks before the last frost (usually the end of March). Direct sowing: after the last frost (mid-April). Transplant in late March, and again in early August. Space 4-5" apart, if you will harvest plants all at once. Plant 8-10" apart, if you will be harvesting outer leaves over time. The secret to good production is quick growth. This is achieved with regular fertilizing or a layer of continuously maintained compost. Pick outer leaves over 6" long, or clip young leaves for salads. Leave center of plant intact for prolonged harvest. After cutting plants, immerse in an ice bath for 10-15 minutes, dry thoroughly, place in plastic bags, and refrigerate immediately. Can be blanched and frozen. Preferred pH: 6.0-7.0. Companions: Lettuces, legumes, cabbage family.

**SPINACH** - Can be grown from seed or set out as transplants. Sow indoors 3-4 weeks before last frost (late February-early March) or in mid-July for planting in mid-August. Grow in furrows or raised beds. Plant as early as possible, after the hardest freezes have past (usually March). Likes plenty of water and rich soil. Incorporate fertilizer or compost at planting, and side dress again during the season. To harvest, cut outermost leaves, allowing center of plant to continue producing. Small, young leaves can be cut for salads. Preferred pH: 6.5-7.5. Companions: Peas, 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.