

Garlic at Growing Gardens (bot. *Allium sativum*)



Plant characteristics:

- native to the Caucasus (Eurasian Mountains between the Black and Caspian Seas) with sandy loam soil in which most types still thrive
- cool season crop: cold-hardy and frost tolerant, usually planted in fall for summer harvest (ideally Sept 15-Oct 15 in Rockies for June/July harvest); hard-neck bulbils for green garlic can be harvested in spring and in some regions, garlic is planted in the spring
- prefers slightly dry sites in full sun with slightly acidic soil (like here) but has wide range of pH
- needs loose and rich soil, meaning: drip irrigation for moisture and good drainage; must be highly fertile and weeded (nitrogen/organic matter/local compost). Heavy soil will cause poor and irregular growth patterns
- soil enhancers: greens and, rock phosphate, humic acid fertilizer at planting time
- for small-scale organic farming, local bulbs generally produce better yield
- considered an easy home garden crop but commercial organic maintenance requires heavy weeding and other manual labor for harvest
- typically grows 1-2 feet high, with 6-12 inch spread, with each clove bearing 2-3 fertile/mature leaves (softnecks can have more) and a vegetative bud; average number of cloves per bulb from 6-24 depending on type and variety

***Trivia: Americans eat over 2 pounds of garlic annually, and we are the 5th biggest grower of garlic worldwide (China leads), with California as the leading production state

2 (debatably 3) main types:

1. STIFFNECK/HARDNECK (var. ophioscorodron): milder flavor, more winter-hardy, woody scape, ready when straight, usually smaller bulbs in a single ring around central stem, easier to peel by cracking, includes Rocambole, Purple Striped, and Porcelain varieties

2. SOFTNECK (var. sativum): no woody scape, larger bulbs, especially outer ring, strong flavor, less winter-hardy, ready when most bottom leaves turn yellow/brown), includes Silverskin and Artichoke varieties; most common type in supermarkets

3. ELEPHANT (var. ampeloprasum), the contested type: very large, mild and more onion-like flavor, closer relative to leeks but commercially marketed as garlic, don't store or handle cold well

Planting instructions:

- **Direct:** Plant cloves (bulblets) in ground from biggest heads (bulbs) of previous harvest, root down or stiff/hardnecks and some others may not grow
- **Optimal growing soil temperature:** 55-75 degrees; minimum 45 degrees, maximum 77 degrees
- **Seed:** 1 ½-2 inches deep; 4-6 inches apart within row, with rows 12-24 inches apart (*NYTimes*: Plant each clove 4 inches apart in a furrow, about 4 inches deep)

Harvesting:

- soft-neck is ready when they fall over, but hard-neck sends up hollow stem (scape) between its leaves that spirals as it forms a cluster of bulbils at its tip as sign of maturity
- early summer harvest , sometimes even April-May depending on climate (green or fresh garlic is available during these months)

Curing and Storing:

- dry bulbs over screens in semi-shaded, dry, airy room or braided/stringing from a rafter; this will preserve it for long-term storage, as the energy will concentrate in the bulbs. Make sure all bulbs have access circulating air, usually in bunches of 4-6 depending on size, for even drying without spoiling and even, optimal retention of garlic's natural oils/moisture
- two weeks drying time is recommended, at a moderate and stable room temperature, within approx. 60-80 degree range (recommendations quite variable here)
- remove excess dirt, trim roots if desired. Outer layers of skin can be removed but leave most of these protective wrappers intact.
- stores up to 6 months in dry, dark, well-ventilated areas, especially if still in whole bulbs (cloves will degrade quickly once removed from heads). Use or throw out damaged bulbs immediately or they will cause others to rot.
- for processing, trim roots to a couple centimeters, stems to an inch or less (a longer stem makes it easy to crack stiffnecks)
- once processed, an overturned (perforated) clay pot or wire-mesh basket is ideal, so that garlic is well-ventilated but not exposed to too much light or moisture. Do NOT refrigerate/freeze.

Recommended cultivars for local climate:

1. **German Extra Hardy/German Red**, stiffneck
2. **Purple Stripes**, stiffneck, "bulletproof...do better in the dry, clay soil of Colorado," according to local farmers
3. **Inchelium Red**, softneck heirloom (planted at GG 2011/2012)
4. **Chesnok.*** softneck heirloom (planted at GG 2012, from Botanical Interests Seeds)
5. **New York White aka Polish White**, softneck
6. **GSF(Garlic Seed Foundation) #65**, stiffneck
7. **Colorado Black**, stiffneck, produces large bulbs despite poor soil conditions
8. **Elephant**, mixed review

Common troubleshooting:

- poor growth, bad bulbs: under fertilization, planted too late, or not enough watering

- lopsided bulbs: soil too heavy or inadequate spacing
- nothing sprouted: root end up
- proximity to commercial allium farms and high moisture encourage pests, rot
- plant healthy, non-infected stock and use crop rotation, covers like rye and red clover
- watch out for nematodes (wormlike pest that lingers in soil for generations); onion thrips (damaging insect with short life-cycle), mites, maggots, some worms like army and wireworms; rot, especially White Rot (fungus that persists through generations) and Basal Rot (bottom rot caused by fusarium, a fungus that attacks weakened plants and causes decay); mold, viruses, especially Yellow Dwarf Virus (infection causes yellowing leaves and further degradation to stressed plants, can sometimes be corrected with burning, disinfectant)

Nutrient deficiency chart (From: *Growing Great Garlic*)

Element	First Signs	Oldest or Youngest Leaves Affected First	Leaf Tip or Base First	New Leaves After First Symptoms Appear	Symptoms in Later Stages
Nitrogen	yellow leaf tips	oldest	tip	Continue to be produced with normal color, but each new leaf smaller so plant looks stunted	Purple veins at base of upper leaf blades and throughout lower leaf sheaths.
Potassium	deep yellow leaf tips	oldest	tip	Small and weak with fewer total leaves than in normal plants	General chlorosis of upper leaf blade. Deep yellow at leaf tip starts at margin and moves in and down. Complete yellowing and death of older leaves occurs rapidly.
Calcium	necrotic spots	all	upper one-third of upper leaf blade	none	As spots increase in size, the leaf blade bends down and leaf tips die. Gradual dieback of entire leaf. About one-half as many total leaves as a normal plant. May produce rounds instead of cloved bulbs.
Magnesium	general chlorosis	oldest	base	Continue to be produced with normal color. Sharp contrast with older, yellow leaves.	Often only three to five green leaves at any time. Lower leaves yellow or dead.

Table 3. Comparison of Some Deficiency Symptoms in Garlic (adapted from F. Coats, 1980)

References:

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