



Onions, Garlic and Shallots

Diane Relf, Extension Specialist, Horticulture, Virginia Tech

Alan McDaniel, Extension Specialist, Horticulture, Virginia Tech

Reviewed by Dave Close, Consumer Horticulture and Master Gardener Specialist, Horticulture, Virginia Tech

ONIONS

Environmental Preferences

LIGHT: Sunny. (Green onions tolerate partial shade.)

SOIL: Well-drained loam.

FERTILITY: Medium-rich.

pH: 5.5 to 7.0

TEMPERATURE: Cool (45 to 60°F) during development; Medium-hot (60 to 75°F) during bulbing and curing.

MOISTURE: Moist, but not waterlogged.

Culture

PLANTING: Use sets, seeds, or transplants in the spring for bulbs and for green or bunching onions. Seeds may be started indoors eight weeks before setting out; use sets in the fall for perennial or multiplier types of onions.

SPACING: 1 to 6 inches by 12 to 24 inches for standard spacing; 4 inches by 4 inches for wide row in rows up to 2 feet apart. Plant close, then thin using thinnings as green onions.

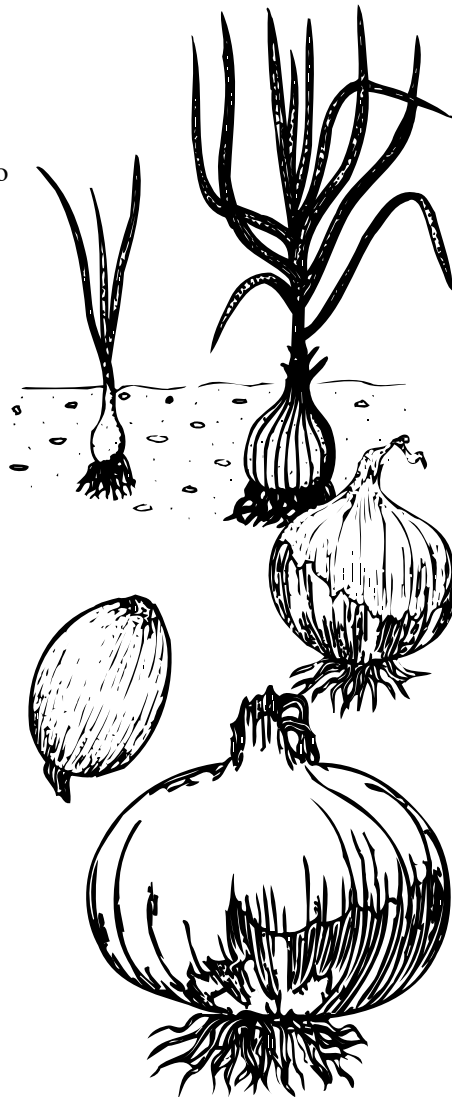
HARDINESS: Hardy biennial - bulb onions, green or bunching onions; Hardy perennials - Egyptian onions or perennial tree and multiplier.

FERTILIZER NEEDS: Heavy feeder. Apply 4 to 5 pounds 10-10-10 per 100 square feet before planting. Use starter solution for transplants. Sidedress one to two weeks after bulb enlargement begins, using 3 tablespoons 33-0-0 per 10-foot row.

Cultural Practices

Onions are often grouped according to taste. The two main types of onions are strong flavored (American) and mild (often called European). Each has three distinct colors, yellow, white, and red. In general, the American onion produces bulbs of smaller size, denser texture, stronger flavor, and better keeping quality than European types. Globe varieties tend to keep longer in storage.

Onion varieties also have different requirements as to the number of hours of daylight required to make a bulb. If the seed catalog lists the onion as long day, it sets bulbs when it receives 15 to 16 hours of daylight and is used to produce onions in Northern summers. Short day varieties set bulbs with about 12 hours of daylight and are used in the deep South for winter production. This explains why Virginia is not a major onion production area and yields are lower than in the more northern and southern regions of the U.S. Consider selecting quick maturing varieties marked day neutral for earlier bulb production while weather is still cool for sweeter bulbs.



Visit our website: www.ext.vt.edu

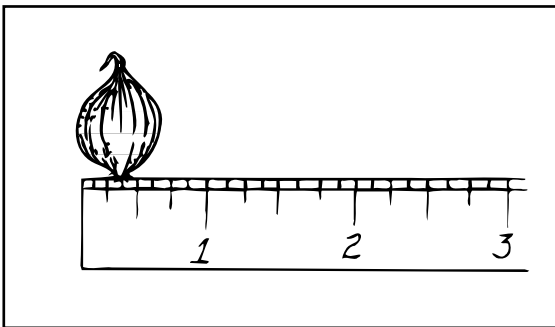
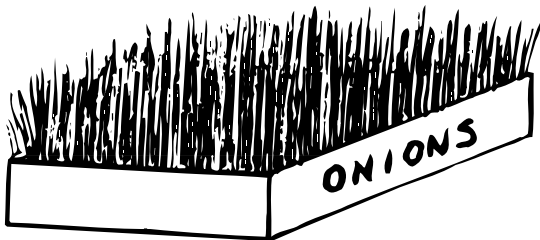
Produced by Virginia Cooperative Extension, Virginia Tech, 2020

Virginia Cooperative Extension programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. Edwin J. Jones, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; M. Ray McKinnie, Administrator, 1890 Extension Program, Virginia State University, Petersburg.



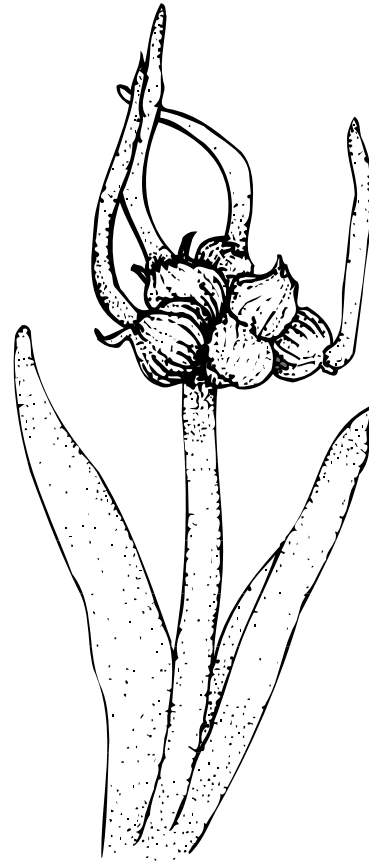
For green or bunching onions, use sets, seeds, or transplants in spring; or use Egyptian (Perennial Tree) and the Yellow Multiplier (Potato Onion) sets in the fall.

For bulb production, plant sets in early spring. Set 1 to 2 inches apart and 1 to 2 inches deep in the row. Thin to 4 inches apart, and eat the thinned plants as green onions. Avoid sets more than an inch in diameter because they are likely to produce seed stalks. Too early planting and exposure to cold temperatures also causes seed stalk development. Some people have best bulb production using seedlings or transplants rather than sets. Egyptian Tree or Multiplier onions should be set in late October or early November. Plant 4 inches apart in rows 1 to 2 feet apart. Distance between rows is determined by available space and



cultivating equipment.

Bulbs compete poorly with weeds due to shallow root systems. Shallow cultivation is necessary; do not hill up soil on onions as this can encourage stem rot. Insure ample moisture especially after bulbs begin enlarging. Onions should be harvested when about two-thirds of the tops have fallen over. Careful handling to avoid bruising helps control storage rots. Onions may be pulled and left in the field for several days to dry then cured in a well-ventilated attic or porch for one to two weeks out of direct sun. Tops may be left on or cut off; but leave at least 1 inch of the top when storing. Thorough



curing will increase storage life.

COMMON PROBLEMS

DISEASES: Neck or stem rot, bulb rot.

INSECTS: Thrips, onion root maggots.

CULTURAL: Bulb rot from bruising, insufficient drying; split or double bulb from dry soil during bulb formation; very small bulb from too late planting, too dry soil, or wrong varieties.

HARVESTING AND STORAGE

DAYS TO MATURITY: 85 to 185 days for mature bulbs.

HARVEST: Harvest green onions when tops are 6 inches tall. Harvest bulbs after $\frac{2}{3}$ or more of the tops have fallen over. Do not wait more than one to two weeks after this occurs. Allow for thorough drying before storage.

APPROXIMATE YIELDS: 10 to 15 pounds per 10-foot row.

AMOUNT TO RAISE: 10 to 15 pounds per person.

STORAGE: Cool (32°F), dry (65 to 70% relative humidity) conditions for six to seven months.

PRESERVATION: Onions may be stored dry or pickled and canned. They freeze well if chopped and covered with water. For fresh storage, maintain good air circulation. One effective storage method is to place onion in discarded hosiery, tie a knot, and add another onion. When hosiery is filled, suspend from rafters in storage area.



GARLIC

ENVIRONMENTAL PREFERENCES

LIGHT: sunny, (will tolerate partial shade)

SOIL: well-drained loam, moderate organic matter

pH: 5.5 to 7.0

TEMPERATURES: cool (45 to 60°F) during early development, medium hot (60 to 75°F) during bulbing

MOISTURE: moist, but not waterlogged

CULTURE

PLANTING: Use cloves which are divisions of the mature bulb. Divide just before planting. Plant early in spring in well-drained soils or in fall and mulch well. Young plants are frost tolerant.

SPACING: standard 3 to 5 inches x 12 to 24 inches (cover to a depth of 1 inch); wide row 3 x 4 inches in rows 12 inches apart

HARDINESS: hardy perennial, grown as an annual

FERTILIZER NEEDS: add 3 to 4 lbs. of 10-10-10 per 100 sq. feet when preparing soil; sidedress one to two weeks after bulb enlargement begins with 2 lbs. of 10-10-10

over 100 sq. feet.

CULTURAL PRACTICES:

Garlic, a member of the onion family, may be grown successfully in most Virginia home gardens. There are early (white or Mexican) cultivars and late (pink or Italian) cultivars. The early cultivar does not store well and has poorer quality, but out-yields the later type. Garlic must be planted early in Virginia (March or April) to permit full development. Fall preparation of the soil is desirable so the soil can be fertilized and planted with minimum tillage in the spring.

Garlic is started by planting cloves that are divisions of the large bulb. Each bulb contains a dozen or more cloves; each clove is planted separately. The larger cloves yield larger size mature bulbs at harvest. Do not divide the bulb until ready to plant; early separation decreases yields. Select "seed bulbs" that are large, smooth, fresh, and free from disease.

Plant the cloves 3 to 5 inches apart in an upright position (to assure a straight neck), and cover them to a depth of about 1 inch. Allow 12 to 24 inches between rows. Garlic also lends itself well to a wide row system of planting, spacing cloves 3 to 4 inches apart in rows a foot wide. This requires considerably less garden space for the same yield.

Garlic grows best on well-drained garden loam soils that are fertile and high in organic matter. Gardeners who grow good onion crops can grow garlic. Garlic does well at high fertilizer levels. When preparing soil for planting, apply 3 to 4 lbs. of 10-10-10 fertilizer per 100 square feet. Bulbs will be small if the soil is excessively dry, and irregular in shape if the soil becomes compacted.

Harvest bulbs when the tops start to dry, usually in August. Place in trays with screens or slatted bottoms, and remove tops when dry. Mature bulbs are best stored under cool, dry conditions.

COMMON PROBLEMS

DISEASES: bulb rot in poorly drained soils

INSECTS: thrips, root maggots

CULTURAL: bulb rot (from bruising, insufficient drying)



SHALLOTS

ENVIRONMENTAL PREFERENCES

LIGHT: sunny

SOIL: well-drained, sandy loam

pH: 5.0 to 6.8

TEMPERATURE: cool (55 to 75°F)

MOISTURE: moist, but not wet

CULTURE

PLANTING: Plant individual sets 1 to 2 inches deep in early spring. In warmer climates, plant in fall for winter and spring harvest.

SPACING: standard 4 to 6 inches x 12 to 18 inches or in double rows

HARDINESS: hardy perennial

FERTILIZER NEEDS: Mix 3 lbs. 10-10-10 per 100 sq. feet into soil before planting; sidedress with 2 lbs. 10-10-10 per 100 sq. feet twice during growing season.

CULTURAL PRACTICES:

Shallots like a rich, loose soil; mix plenty of compost, decomposed manure or other organic matter into bed before planting. If shallots for planting are sold in clumps, divide into individual sets (bulbs) before planting. Plant as soon as soil can be worked in spring. Plant with pointed tip up; tip should be just below soil line or barely poking through. Mulch or cultivate to keep weeds from competing for moisture. Shallot roots are shallow so cultivation must be carried out with care. Shallot bulbs develop on top of ground. Do not cover with soil.

Shallots have a mild flavor prized by gourmets, and are used in the green onion stage, or as bulbs. Pull green shallots when they are about 1/4 inch in diameter and store in a cold, moist place for short periods. Mature, dry bulbs are dug after the tops die back, usually in mid- to late summer. Cure in a warm, dry place for about a week. Store in mesh bags in cool, dry conditions. Replant the smaller bulbs or use them first since they do not keep well.

COMMON PROBLEMS

DISEASES: downy mildew, bacterial soft rot, neck rot

INSECTS: onion maggot, onion thrips

CULTURAL: bulb rot from bruising or planting too deeply; tip burn from ozone (air pollutant)

HARVESTING AND STORAGE

DAYS TO MATURITY: 60 to 75 days

HARVEST: Harvest as green onions when tops are 6 to 8 inches high (about six weeks after planting). Side shoots also have little white “button” onions at their base which may be mixed with vegetables, casseroles, etc. Harvest mature bulbs when tops have turned yellow and bulbs are 1 to 1 1/2 inches in diameter. Cut off tops and cure.

APPROXIMATE YIELDS: 10 to 20 shallots per bulb planted; 4 to 8 lbs. per 10 foot row

AMOUNT TO RAISE PER PERSON: 3 to 4 lbs.

STORAGE: cool, dry area (32 to 40°F, 60 to 70% RH); six months or longer

PRESERVATION: store dry or freeze by chopping and covering with water

