SUSTAINABLE GARDENING

FOR SCHOOL AND HOME GARDENS

Okra

Abelmoschus esculentus

QUICK FACTS

- **Plant family:** Malvaceae (Hibiscus)
- **Season:** Warm
- **Life cycle:** Annual
- **Seed to first harvest:** 55-70 days

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History

Okra is a member of the Malvaceae family, also known as mallow or hibiscus family, which includes the tropical crops cotton and ornamental hibiscus (see Figure 1) as well as roselle (also called Jamaica sorrell, *Hibiscus sabdariffa*) that is used in teas and salads. In addition, tropical plants of economic importance in this family include cacao, durian, kapok, jute and cola nut.

Okra is native to the region known as present-day Ethiopia and Eritrea, along the White Nile River (and also possibly to South Asia). It spread from the Upper Nile to North Africa, the eastern Mediterranean, Arabia and India and was described by a Spanish Moor in Egypt in 1216. The earliest record of okra in the New World is from Brazil in 1658, where it was probably brought by enslaved West Africans. Although some food historians credit French Creoles with popularizing okra in the United States, the name "okra" likely originates from "nkru-ma," a word from the Ashanti people of present-day Ghana, one of the countries of origin of enslaved Africans in the United States.

Thomas Jefferson knew of okra being grown in Virginia before 1781, and it was grown as far north as Philadelphia in colonial times. A large, tender, tropical, annual in the hibiscus family, it is most widely grown along the Gulf Coast, where it is more suited to the

Figure 1. Malvaceae includes mallows, hibiscus, okra and cotton.

warm, humid climate and has been well integrated into Gulf Coast cuisine. The name of the classic Louisiana dish gumbo comes from a West African word for okra "gombo," which suggests that gumbo was originally made with okra as an ingredient. The use of filé (sassafras) was a contribution of indigenous people as a substitute for okra in gumbo as a thickening agent, and there are many variations in gumbo recipes, some with and some without okra. Historical records suggest that

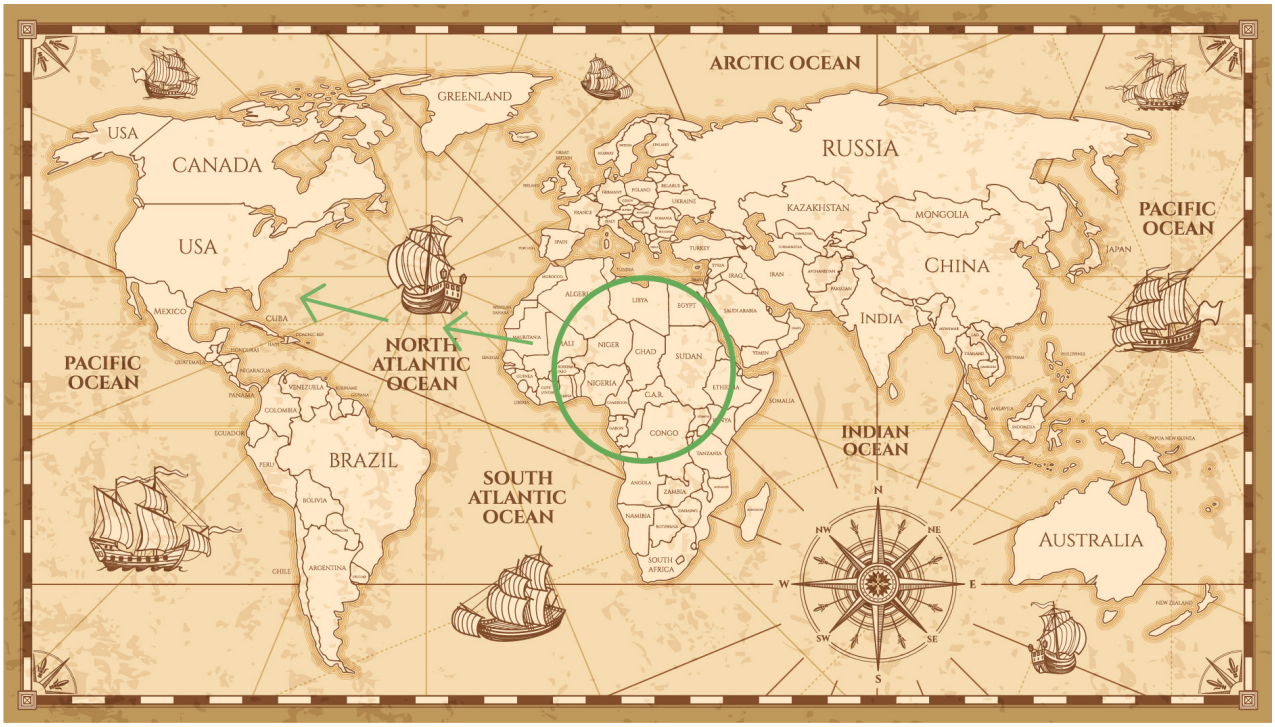

Figure 2. Map showing the origin and migration of okra to the U.S.

enslaved Africans, brought to plantations specifically for their agricultural skills, carried seed from Africa and were allowed to grow okra in their gardens to sustain themselves.

Okra prefers a hot, dry climate and well-drained soil but benefits from irrigation during dry periods. It is highly adapted to growing in Louisiana and will produce well throughout the heat of summer and into the fall when few other vegetable plants are productive. Okra is primarily used in the U.S. for its mucilaginous fruit pods although throughout history the tender leaves are often consumed as a vegetable in West Africa and Southeast Asia and ground, mature, dried seeds are used as a coffee substitute or coffee adulterant in several countries. Okra plant fiber from stems has also been used as paper pulp (similar to its relative, jute) and also as a fuel.

Growing

Varieties

Okra is a large, tropical, plant with pubescent (hairy) stems that may be irritating to the skin. It is grown for its immature fruit seed-bearing pods which are used in soups and stews, or as a boiled or fried vegetable. The entire plant is highly susceptible to frost damage and is easily killed by the first cold temperatures in the fall. Plants may be tall and unbranched, maturing at 8-9 feet tall, or dwarf and branching, reaching no more than 4-5 feet in height. Different varieties offer variation in stem and pod color, mostly green but also red, and in the shape and size of pods. Pods may be short and fat or very long, smooth or spiney, or rounded or angular with lengthwise ridges in shape (see Figure 3 for contrasts in plant size and pod shape). Variety recommendations for Louisiana are found in Table 1.

Several open-pollinated, heirloom okra varieties are available. Heirlooms are those varieties which have been carefully saved by growers for 50 years or more. While consistent harvesting is required to keep plants blooming and producing for months, production slows with cool night temperatures at the end of the season in the fall. Okra has showy, perfect flowers (containing both male and female parts) that are 1 ½ inches to over 3 inches in diameter. The flowers with five white to yellow petals and often with a red or purple coloration at the base, are open for only one day. Mature okra pods are well-suited to seed saving, as it is generally considered self-pollinating. Flowers may, however, be cross-pollinated by insects, such as honeybees and bumblebees, when several varieties are grown in close proximity and blossom at the same time. In order to maintain okra cultivar purity in seed saving, it is recommended to isolate one variety from another by 500 to 1,600 feet. Another option is to cover the okra flower with a paper bag for the one day the flower is open to ensure self-pollination. Pods of nonhybrid varieties may be left on healthy plants in October and allowed to mature and dry for seed collection for the following year's crop. The dried seed can be stored for up to five years. Seeds of hybrid varieties often do not reproduce identically to parent plants and should not be saved.

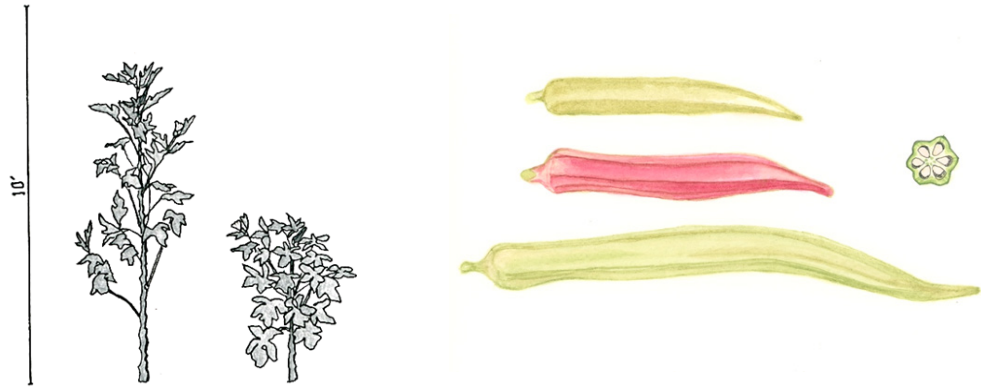

Figure 3. Okra varieties may be either standard or dwarf in size and have variable pod shapes and sizes.

Table 1. Recommended Okra Varieties for Louisiana.

Variety Name	Description	Days to Harvest and Pod Size
Annie Oakley	Dwarf (4-5'); spineless pods, slightly ribbed	50 4-6" pod
Burgundy	Dwarf (4-5'); burgundy-colored pods and ornamental red stems	55 6"
Cajun Delight	Dwarf (4'); vigorous plant; dark green, five-sided pods, remaining tender up to 5"	50-55 6"
Clemson Spineless	Heirloom; favorite home variety; straight, ridged, spineless pods. Clemson Spineless 80 is an heirloom dwarf version (3-4').	60-65 5-7"
Cowhorn	Heirloom; very long slender pods that remain tender up to 6-10"	55 6-10"
Emerald	Heirloom; smooth, round, velvety pods that stay tender up to 8"	55 6"
Lee	Compact plant, developed by University of Arkansas; spineless pods; suitable for container growing	58 5"
Louisiana Green Velvet	Heirloom; drought tolerant and disease resistant; smooth and spineless	56 6-7"
Millionaire	Quick maturing variety similar to Clemson Spineless; favored in Florida	60 5-6"

Notes: Table varieties selected from recommendations from LSU AgCenter, Mississippi State University, NC State University, Texas Agrilife Extension and University of Florida. Other recommended varieties for Louisiana include: Carmine Splendor, North and South and Spike.

When and How to Plant

Okra is grown as a warm season annual in Louisiana that should be direct seeded according to the recommended planting dates in Table 2. Soil temperature should be at least 65 F for good germination. Seed will also germinate well in very warm soil temperatures, up to 105 F. For early harvests of okra, use black plastic mulch to warm the soil and plant transplants through the mulch when the soil is 60 F or warmer. Seeds are fairly large with a tough, protective seed coat. Germination will take about a week to 10 days but can be hastened by soaking in plain water or chlorine bleach before planting. Soak overnight in water or for about 20 to 30 minutes in diluted or undiluted chlorine bleach. The bleach is not toxic to seeds. Seeds are ready for planting when the dark outer seed coat has cracked open, revealing the white seed inside. Drain and plant. Do not delay planting soaked seeds of any kind, as once seeds have imbibed water, the germination process has begun and the seed will die if allowed to dry out.

Refer to the Okra Planting Guide (Table 2) for the recommended spacing, as plants will grow very large. Adequate spacing will also aid in avoiding physical contact with plant leaves and stems, which may irritate the skin. Plant seed either every 4 inches and thin to 12-24 inches apart or plant several seed every 12-24 inches and thin to a single plant after germination. A second planting may be made six weeks later to ensure a continued supply when the first planting begins to slow in production.

Table 2. Okra Planting Guide.

Plant Outside Dates*	Spacing In-Row (feet)	Between Row Spacing (feet)	Days to Harvest
North LA: April - July South LA: March - August	1-2'	3-4'	55-70 days

**Succession plant six weeks after initial planting for continuous season-long production.*

Where to Plant

Okra prefers full sun (at least six hours/day) and a well-drained soil. A soil pH of 6 to 6.8 is preferable; 5.8 and lower will stunt pod development. Orient rows east to west to capture maximum sunlight and shade neighboring plants less. A very large plant, okra should be given plenty of room between rows to avoid contacting the prickly leaves during harvesting. No training or support is needed for okra. It is considered a relatively low maintenance crop. It is recommended to plant in box beds or traditional raised garden rows that are about 4-8 inches tall and at least 24 inches wide to ensure good drainage and prevent disease. In all types of gardens, it is recommended to add a 2-3-inch layer of compost, peat moss, rotted hay or other organic matter and mix into the soil to optimize plant health.

It is recommended to rotate plant families at least every three to four years — not returning the same plant family to the same row for three to four years — to reduce disease and pests.

Plant Care

It is recommended to follow sustainable gardening principles which can be found at https://seedstosuccess.com/seeds-to-grow/glossary-of-gardening-terms-and-concepts/#thinning

Watering: Originating in a hot, dry part of the world, okra tolerates dry soils but benefits from regular watering. Water deeply to reach the large, extensive root system, at least 1 inch per week; 2 inches at the height of summer when plants are larger and in their most active production phase.

Fertilization: Apply a preplant fertilizer by preparing the raised row, sprinkling fertilizer over the top, and raking in before planting seeds. Do not overapply nitrogen, which may cause excessive vegetative growth and reduced pod production.

Organic fertilizers such as compost, fish emulsion, composted poultry litter or manure, worm castings, and blood or bone meal originate from living organisms. They are far more environmentally sustainable and safe than synthetic fertilizers. They naturally release nutrients more slowly and over a longer period of time. When applying organic fertilizer, it is important to use in unison with compost, cover crops and crop rotation, which all work together to build soil health. Learn how to convert inorganic fertilizer recommendations to organic fertilizers at https://extension.uga.edu/publications/detail.html?number=C853

If using synthetic fertilizer, apply 0.5 pounds (1 cup) of 10-10-10 per 25 foot of row or 75 square feet. Broadcast, or sprinkle evenly, over the soil and then mix in about 3-6 inches deep using a rake. Supplemental sidedressing, or reapplication of synthetic or organic fertilizer, is recommended three to four weeks after planting and again when cutting back large plants. Sidedressing is the addition of a small amount of fertilizer to the soil around already established plants when the plant begins to fruit or vine, primarily to provide nitrogen. When using synthetic fertilizer, sprinkle lightly along the side of the row, keeping it about 6 inches away from plant stems; water into the soil. Fish emulsion and blood meal are good nitrogen sources for sidedressing organic okra. Because of their slow, steady release of nitrogen, crops fertilized with organic fertilizer may not need to be sidedressed.

Cutting Back: Plants may be cut back (topped) to a height of 1 foot in midsummer, when plants have matured and production has slowed. Topping (also called ratooning) rejuvenates the plant, induces the development of side branches, and brings pods back within easy reach of the harvester. It is a good practice to sidedress plants when cutting back. The fall yield of plants that have had height reduction often exceeds that of the spring crop.

Figure 4. Okra may be pruned down to 12" in height to rejuvenate the plant after production has slowed with the heat of summer.

Weeds: In addition to warming the soil, plastic mulch will control most weeds; hand pull weeds close to the plant, especially in the planting holes. Hoeing unmulched rows early in the season, when plants are small, will reduce competition and allow the seedlings to achieve a good shade canopy to naturally reduce weed seed germination.

Insects, Pests and Diseases: Okra is a relatively trouble-free crop, though it is susceptible to root-knot nematodes, which will stunt plants and reduce yield. Root-knot nematodes may be managed (though never completely eliminated) by rotating the okra planting space with marigolds (*Tagetes* spp.). Nematodes infest marigold roots but are prevented from reproducing by allelopathic action, thus reducing populations in the soil. Other insect pests are corn earworm, stinkbugs, aphids and ants. Okra may be considered a trap crop for stinkbugs, as it is preferred over tomatoes. Though pods are made less attractive by stinkbug damage, they are still edible. Common ants do not damage plants or plant parts and are only attracted to the large flowers for nectar. Fire ants, however, may damage flowers with excessive feeding and should be controlled.

Table 3. Organic and Natural Management for Common Okra Insect Pests and Diseases.

Symptoms	Diagnosis	Organic and Natural Management
• Curled and yellow leaves • Sticky honeydew on leaves	Aphids	• Reduce water stress • Weed control • Use water jet to dislodge • Beneficial insects: lady bugs, lacewings, predatory stink bugs, syrphid flies • Insecticidal soap, neem oil, pyrethrin, Azera
• Feeding damage on pods	Corn earworms	• Control nearby weeds • Fall till to reduce overwintering pupae • Bt (*Bacillus thuringiensis*) • Beneficials: Steinernematid nematodes
• Bud abortion • Stings when working in plants	Fire ants	• Spinosad ant baits • Control mounds with an insecticide registered for garden use (carbaryl or bifenthrin)
• Poor seedling stand	Rhizoctonia damping off	• Plant when soil temperatures are 65 F and above
• Knotty enlargements (galls) on roots • Stunted plants	Root-knot nematode	• Marigold trap crops before and after okra crops • Turn bare soil during hot, dry weather to reduce soil populations
• Bumps on pods	Stinkbug or leaf-footed bug	• Sunflower and red sorghum trap crops • Handpick and destroy bugs • Scout for egg masses on underside of leaves • Remove or till crop debris • Beneficial insects: Tachinid fly • Insecticides: pyrethrin or sabadilla

Note: Adapted from LSU AgCenter, Texas A&M AgriLife Extension, Alabama A&M, University of Florida Extension and UC Pest Management Guidelines. The Louisiana Pesticide Law regulates the use of pesticides in schools to protect children and staff from harmful exposure to chemicals and is enforced by LDAF. The recommended alternative to routine pesticide use is Integrated Pest Management (IPM), which combines pest control, disease management techniques and organic/natural alternatives, many of which are found in this table.

Harvest and Storage

At the height of production, when days are long and temperatures are high, fruit pods will develop very quickly, within two to four days after flowering. Harvesting is required every other day to avoid rapid development of mature, woody, inedible pods. Begin picking the immature pods while they are still soft and the seeds are only partially developed, about 3 inches in length. Wearing gloves and long sleeves, snap pods out of leaf axils by bending quickly to one side. If pods will not snap off, use pruning shears or a knife to cut pod pedicels and test pods for tenderness by bending the end of the pod. If pod end is still flexible, the pod is tender enough to eat; if tip is stiff, discard. Remove old pods from the plant or it will stop producing new pods.

Store okra dry and unwashed in the refrigerator in a perforated plastic bag for two to three days. Keep pods dry or pods will darken and become slimy. Okra may be stored at higher temperatures for longer storage; 45 F to 50 F for seven to 10 days.

Preserve okra by pickling or freezing. To freeze, slice and arrange on baking sheets. Freeze for several hours and then place into plastic freezer bags.

Very small pods make excellent pickles. Full sized pods may be sliced and cooked as breaded and fried, roasted, stewed or smothered. The addition of tomatoes when smothering (cooking long and slow with onions, garlic and peppers) eliminates the slimy texture often associated with slow cooking. Whole pods may be steamed to the crisp/tender stage and served in a seasoning sauce. Pods from red cultivars take on a normal green appearance when cooked. In some cultures, okra pods are blended with water, lime, honey and salt to make “okra water” which is used in prenatal care.

Nutrition

Okra is nutritious and good for you.

Rich in vitamin C
Important for bones, skin, blood vessels.

High in potassium
Essential for body function, especially the heart, kidney, nerves, bones, and muscles.

Excellent source of dietary fiber
Important for bowel health, lowering cholesterol, controlling blood sugar, and maintaining a healthy weight.

Recipes

Basics of cooking and recipes with okra: extension.purdue.edu/foodlink/food.php?food=okra
General information on selecting, pairing, preparing and storing. Also includes a list of recipes.

Taste Test Ideas

Roasted Okra

Gumbo

Smothered Okra with Tomatoes

Other websites with many okra recipes:

USDA MyPlate Kitchen

myplate.gov/myplate-kitchen/recipes?search=okra
Recipes include spicy okra, lite fried okra and more.

Purdue Extension Foodlink

extension.purdue.edu/foodlink/food.php?food=okra
Recipes include okra and greens, how to freeze okra and more.

California's Eat Fresh

eatfresh.org/search/?search=okra
Recipes include beef and okra stew, spicy okra and more.

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