

# Missouri Environment & Garden

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## Okra: Love It or Hate It

There are many “gray areas” in life—situations where clearly it is not one thing or the other but (more often than not) something in between. Such is not the case when it comes to people’s opinion of okra. Lovers of okra point toward the unique flavor it adds to savory dishes and the many ways it can be used. Those on the opposite side of the debate fail to see how anyone can eat something so (for the lack of a better term) slimy. Thus, when it comes to okra, people either love it or hate it.

Okra (also known as Lady Fingers) goes by the scientific name *Abelmoschus esculentus* and is a member Malvaceae (or mallow) family. Well-known members of this family include cotton, cacao and ornamental hibiscus species. Okra’s place-of-origin is uncertain. Most evidence suggests it came from the area of Africa today occupied by Ethiopia, although some authorities believe it originated in Southeast Asia.

By the 12th and 13th centuries it was widely used by the Egyptians, Spanish Moors and Persians. The plant spread around the shores of the Mediterranean and, later, eastward. Okra most likely was introduced into the Americas by ships carrying slaves from Africa. By 1658, its presence was documented in Brazil and by the early 18th century it made its way into the southeastern United States, most likely entering at New Orleans.

Okra is tall growing, warm season vegetable that needs full sun exposure in a well-drained soil. Poorly drained soils result in poor performance most often due to root-related diseases. Prior to planting, about one pound of a complete fertilizer such as 10-20-10 should be applied per 100 square feet of garden area. Additionally, two sidedressings of fertilizer at the rate of about three ounces per 100 feet of row beginning when plants are six to eight inches tall and again two to three weeks later is recommended. Since okra is quite sensitive to salts, the application of too much fertilizer can lead to root damage.

Okra is a facultative short-day plant meaning blooming will be enhanced when it is exposed to 11 hours of daylight or less. Most okra is direct-seeded into the garden after the soil temperature has warmed to slightly over 60 degrees F. Since okra seeds have a hard coat, germination is enhanced if the seeds are soaked over-night in water. Sow seeds at the rate of about two ounces per 100 feet or row in rows that are 36 to 48 inches apart. Cover seeds to a depth of about one-half inch. After seedlings have emerged and become established, thin to allow about 12 inches between plants. Recommended varieties for Missouri include Annie Oakley II, Clemson spineless and Lee (a dwarf variety).

Alternatively, okra transplants can be started about four to six weeks prior to seeding time in the garden. This allows for early and continuous production of okra.

Okra is drought tolerant but does appreciate adequate amounts of moisture. Therefore during dry periods apply one to two inches of water per week. Soaker hoses or drip irrigation systems work well for this purpose.

Okra has relatively few pests. Weed control is important since okra occupies the garden for an extended period of time and uncontrolled weeds can reduce productivity.

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ity. Aphids may attack young plants early in the growing season. Insects with piercing-sucking mouthparts such as stinkbug occasionally feed on young pods causing them to become misshapen. Japanese beetles have become a recent problem and can cause significant leaf damage in a fairly short period of time.

Root diseases (e.g. damping off) associated with wet cool soils represent the biggest disease threat to okra. In southern parts of Missouri, root knot nematode can become problematic.

The biggest mistake made by most home gardeners when growing okra is to allow the pods to become too mature before harvesting. Okra should be harvested when seed pods are young, tender and fiber-free. For most varieties this is when pods are about two to four inches in length. Because of the rapid growth rate of okra, harvesting on alternate days is necessary to prevent pods from becoming overly mature. Okra does not store well. If attempted, storage should be in a paper bag in the warmest part of the refrigerator.

Love it or hate it, okra is a nutritious vegetable. A one-half cup serving contains only 18 calories and an excellent source of dietary fiber which has been linked to intestinal tract health. Okra contains significant amounts of vitamin C as well as vitamins A and K, calcium, iron, phosphorus, potassium, zinc, copper, folate and antioxidants. Additionally, the mucilage contained by okra is said to bind cholesterol.

### *Okra trivia:*

- The name “okra” probably was derived from the Ni-ger-Congo group of languages
- Okra seeds were once used as a substitute for coffee in the South
- If pressed, okra seeds yield an edible oil with a subtle taste
- Okra mucilage has a pharmaceutical use as a binder for the preparation of tablets
- In eastern countries, a poultice of okra is used to reduce pain
- Mature okra has been used in some parts of the world to produce rope and paper
- A perfume called ambrette is made from the seeds of okra
- A small town in Alabama holds an annual okra festival the second Saturday of August
- The world record okra plant stood 19 ½ feet tall and had a stem circumference of 10 inches

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## It is Time to Evaluate the Nutritional Status of Grapes, Apples, Peaches and Nectarines for Making Fertilization Plans

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It is the time now to start thinking about tissue testing of grapes, apples, peaches and nectarines to evaluate the nutritional status and adopt a fertilizer program based on it. Tissue testing has proved to be a very effective means of predicting fertilizer needs for perennial fruit crops. It has been used as a diagnostic tool for many years. To determine nutrient deficiencies, most growers rely primarily on visual symptoms, plant tissue analysis and soil analysis. Plant analysis and soil testing go hand in hand. A soil test provides an index of the nutrient that is potentially available for the crop. Plant analysis tells how much of that potentially available nutrient is actually taken up by the plant.

For perennial fruit crops (blueberries, strawberries, apples, grapes, peach, nectarine, etc.), tissue testing is the best way to monitor the plant's nutrient needs. Fer-

tilization practices can be monitored by sampling leaves (apples, peaches and nectarines) or petioles (grapes and blueberries) during mid season and making adjustments for the following year.

Foliar samples for perennial fruit crops are typically taken once the plants start bearing regular crops. Plant tissue sample is taken from plants when the nutrient levels in the leaves are relatively stable. The analysis and interpretations are of little value without the use of standard and consistent sampling procedures. In general, plant samples for perennial fruit crops are taken at midseason. Usually the leaf plus petioles or just the petiole alone is sampled for plant nutrient analysis. July to August is the best time to monitor the nutritional status of grapes, apples, pears and nectarines to make adjustments in the fertilizer pro-

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gram to avoid nutrient deficiency and to improving the fruit quality and yield for the following season. If the level of the nutrients falls outside the optimum range, the corrective measures should be taken. Optimum nutrient ranges are based on samples collected at a particular growth stage. Since the results of the plant analysis will be compared to known standards, it is important that parts of plants are sampled at a certain stage of development.

The leaf nutrient concentrations vary throughout the growing season. The general nutrient status of grape vines and orchards should be evaluated annually. This will help in evaluating the response for applied fertilizer. For plant nutrient analysis for orchards, the leaf sample should be collected between July 15th and August 15th. Table 1 lists the proper time and plant parts to sample for perennial fruit crops.

## Submitting Plant Samples for Analysis

Do not include plants affected by insects, disease or pesticide damage. Where a deficiency is suspected, take samples from normal plants in an adjacent area as well as from the affected area. It is important to take a soil sample from each area. Comparing soil and plant analysis results can greatly assist in the interpretations. Collected plant tissue is very perishable and requires special handling to avoid

decomposition. Therefore, fresh plant tissue should be placed in clean paper bags left open; partially air dried if possible or kept in a cool environment during shipment to the laboratory. Wash dusty plants before air-drying. Fresh plant samples should not be placed in closed plastic bags unless the tissue is either air-dried or bag and contents are kept cool. Air-drying of fresh plant tissue can be done by placing the plant tissue in an open, dry environment for 12 to 24 hours. Air dried samples can be placed in a clean brown bag or envelope and mailed to the lab. Request a complete analysis of each plant sample including nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), copper, iron, zinc, manganese and boron. The University of Missouri soil and plant testing lab offers this service for \$25 per sample. Information on submitting samples to the lab and sample information forms can be obtained from the lab's website at: <http://soilplantlab.missouri.edu/soil/>

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**Table 1: How and When to Sample Perennial Fruit Crops?**

Crop	Stage of Growth	Plant Part /Location on Plant	Number of samples or Plant Part
Apples	July 15 – Aug. 20	Fully-expanded leaf from middle of current terminal shoot	40 leaves and petioles
Blueberries	First week of harvest	Young mature leaf from current season's growth	40 leaves detach petioles
Brambles	Aug 1 –Aug 21	Select the most recent fully expanded leaf blade of each primocane	40 leaves detach petioles
Fruit Trees (Peach, nectarine, plums, etc., )	July 15- Sept 1	Select shots at eye level from around the outside of the tree. Select shoots that make a vertical angle of 45-60 degrees to the ground. Remove 1 or 2 leaves from the mid portion of current season's growth.	30 leaves detach petioles
Grapes	Veraison	Petiole from most recently matured leaf on shoot (1 petiole per shoot)	60 petioles
Raspberries	First week in Aug.	Leaf 18 inches from tip	30 leaves
Strawberries	Mid Aug.	Mature leaves from new growth at flowering	20 leaves

# August Gardening Calendar

## Ornamentals

- Weeks 1-4: Continue spraying roses that are susceptible to black spot and other fungus diseases.
- Weeks 1-4: Annuals may appear leggy and worn now. These can be cut back hard and fertilized to produce a new flush of bloom.
- Weeks 1-4: Deadhead annuals and perennials as needed.
- Weeks 1-2: Divide oriental poppies now.
- Weeks 1-2: Feed mums, asters and other fall-blooming perennials for the last time.
- Weeks 1-2: Roses should receive no further nitrogen fertilizer after August 15th.
- Weeks 1-2: Powdery mildew on lilacs is unsightly, but causes no harm and rarely warrants control, though common rose fungicides will prove effective.
- Weeks 1-2: Madonna lilies, bleeding heart (*Dicentra*) and bloodroot (*Sanguinaria*) can be divided and replanted.
- Weeks 1-2: Divide bearded iris now. Discard old center sections and borer damaged parts. Replant so tops of rhizomes are just above ground level.
- Weeks 1-2: Prune to shape hedges for the last time this season.
- Weeks 2-4: Order bulbs now for fall planting.
- Weeks 2-4: Evergreens can be planted or transplanted now to ensure good rooting before winter arrives. Water both the plant and the planting site several days before moving.
- Weeks 2-4: If you want to grow big dahlia flowers, keep side shoots pinched off and plants watered and fertilized regularly..

## Lawns

- Weeks 1-2: Zoysia lawns can receive their final fertilizer application now.
- Weeks 1-2: Apply insecticides now for grub control on lawns being damaged by their activity.
- Weeks 3-4: Lawns scheduled for renovation this fall should be killed with Roundup now. Have soil tested to determine fertility needs.
- Week 4: Dormant lawns should be soaked now to encourage strong fall growth.
- Week 4: Verify control of lawn white grubs from earlier insecticide applications.

## Vegetables

- Weeks 1-4: Compost or till under residues from harvested crops.
- Weeks 1-3: Sow seeds of beans, beets, spinach and turnips now for the fall garden. Spinach may germinate better if seeds are refrigerated for one week before planting.
- Weeks 1-3: Cure onions in a warm, dry place for 2 weeks before storing.
- Week 1: Broccoli, cabbage and cauliflower transplants should be set out now for the fall garden.
- Weeks 2-4: Begin planting lettuce and radishes for fall now.
- Weeks 3-4: Pinch the growing tips of gourds once adequate fruit set is achieved. This directs energy into ripening fruits, rather than vine production.

# August Gardening Calendar

## Fruits

- Weeks 1-4: Prop up branches of fruit trees that are threatening to break under the weight of a heavy crop.
- Weeks 1-3: Protect ripening fruits from birds by covering plants with a netting.
- Weeks 1-3: Continue to spray ripening fruits to prevent brown rot fungus.
- Week 1: Thornless blackberries are ripening now.
- Weeks 2-4: Watch for fall webworm activity now.
- Weeks 2-4: Cultivate strawberries. Weed preventers can be applied immediately after fertilizing.
- Weeks 2-3: Spray peach and other stone fruits now to protect against peach tree borers.
- Weeks 2-3: Fall-bearing red raspberries are ripening now.
- Weeks 2-3: Sprays will be necessary to protect late peaches from oriental fruit moth damage.

## Miscellaneous

- Weeks 1-4: Soak shrubs periodically during dry spells with enough water to moisten the soil to a depth of 8-10 inches.
- Weeks 1-4: Once bagworms reach full size, insecticides are ineffective. Pruning off and burning large bags provides better control.
- Weeks 1-2: Spray black locust trees now to protect against damage by the locust borer.
- Weeks 2-4: Hummingbirds are migrating through gardens now.
- Weeks 2-3: Watch Scotch and Austrian pines now for Zimmerman pine moth damage. Yellowing or browning of branch tips and presence of pitch tubes near leaf whorls are indicative. Prune and destroy infected parts.
- Weeks 3-4: Clean out cold frames to prepare for fall use.
- Weeks 3-4: Monitor plants for spider mite activity. Hose these pests off with a forceful spray of water.
- Weeks 3-4: 2nd generation pine needle scale crawlers may be present on Mugo pine now.

*Gardening Calendar supplied by the staff of the William T. Kemper Center for Home Gardening located at the Missouri Botanical Garden in St. Louis, Missouri. ([www.GardeningHelp.org](http://www.GardeningHelp.org))*