

Drought-Tolerant Landscapes for Alabama

ANR-1336

Introduction

A well-designed and managed landscape can reduce the amount of water needed for home landscape irrigation. This conservation of water becomes increasingly important as municipal governments impose broad watering bans in response to drought situations that create water shortages and strained water supplies. Overhead landscape irrigation is usually the target of these water conservation policies because it is viewed as noncritical consumption.

Thoughtfully planned, attractive landscapes are important because they provide environmental benefits and add value and beauty to homes. The environmental benefits include reducing soil erosion and storm water runoff, providing wildlife habitats, removing carbon dioxide and pollutants from the atmosphere while adding oxygen, and keeping homes cooler in the summer and protecting them from cold winds in the winter.

Homeowners can ensure a sustainable landscape by planning for water conservation, choosing appropriate plants, improving the soil, establishing plants properly, mulching, fertilizing correctly, and watering efficiently.



Some plants perform well with only occasional irrigation.

Planning for Efficient Use of Water

It is important to plan a design for the landscape. The types of plants used and their location, the condition of the soil, and other factors all affect how much water must be used to maintain the landscape.

Hydrozoning is locating plants according to a landscape's differing levels of shading, soil evaporation rates, and exposure to ambient weather conditions. Early in the design process, divide the landscape into low-, moderate-, and high-water-use

areas, or hydrozones. Walk around the landscape and identify places where the soil stays moist longer and separate them from the areas fully exposed to the sun where the soil tends to dry quickly.

Low-water-use hydrozones should comprise as much of the landscape as possible when water conservation is desired. Generally, low-water-use hydrozones are located away from the most traveled areas of the landscape, but this is not a requirement. Moderate-water-use hydrozones should include established plants that only require

irrigation every 2 to 3 weeks in the absence of rainfall or when they show visible signs of stress, such as wilted foliage and off-green color. High-water-use hydrozones should be limited and should be strategically located for high impact and easy access, such as areas around patios, decks, pools, or entryways.

As a starting point, 10 percent or less of the total landscape should be zoned for high water use, 30 percent or less for moderate water use, and 60 percent or more for low water use.

Plants vary tremendously in drought tolerance. Many native plants, once established, often require little supplemental water or maintenance, but don't assume that all native plants are drought tolerant or suitable for home landscapes.

When available, incorporate native wooded areas into the landscape and blend these areas with the planted portions of the landscape. Remove weedy or undesirable understory plants to create more open areas. It may be necessary to remove some canopy trees to reduce competition and improve the health of remaining trees. Large canopy trees should be strategically placed to keep the landscape cooler and reduce water loss while providing a comfortable living environment. In planted areas, it may be tempting to position plants close together so they are more visually appealing when young, but drastic pruning likely will be needed as plants approach maturity, which increases water use and plant stress. Learn the expected mature size of the plants to be included and provide them with sufficient space.

Windbreaks help keep the plants and soil from drying. Use trees, informal hedges, shrubs, or tall ornamental grasses as natural windbreaks.

Decide which plants should be watered first, second, and third, considering plant value, replacement costs, time to grow a comparable plant, and which ones are significant to you. One essential feature of a water-efficient landscape is the gardener's judgment on when irrigation is needed as opposed to relying on an automated timer.

Soil Improvement

Preparing the soil thoroughly helps ensure good root growth; a plant with deep, extensive roots can withstand periods of drought better than plants with shallow roots. Research has shown that digging a wide planting hole or tilling the soil deeply improves the structure of the soil and results in rapid plant establishment and better root growth.

Organic matter dramatically improves most of the different kinds of soils in Alabama. If the soil is fine clay, choose a coarse-textured organic matter such as aged pine bark to increase aeration in the soil. This product is available at garden centers in bags, usually labeled as soil conditioner. If the soil is sandy, add fine-textured organic matter for water-holding capacity. Compost, humus, and top soil are fine-textured products. Peat moss is another alternative that has a high water-holding capacity. It degrades slowly in the soil, but it is expensive. Peat moss is available in bags or compressed bales; compressed bales usually are the best deal. Composted animal manure is also available in bags. Animal manure decomposes rapidly in soil, but it does provide plants with nutrients and is inexpensive.

Water-absorbing hydrophilic polymers are designed to be mixed with soil and act as artificial reservoirs that release water to plants as

the soil dries. These polymers come in plastic containers and look like small white crystals; however, the addition of high rates of limestone or fertilizer retards uptake by these polymers, though the correct application rate and the longevity of the polymer in the soil is debated. Considering this in addition to the high cost of the polymers currently makes recommending these materials difficult.

The best time of year to prepare previously undisturbed soil is in the fall because it allows time during the winter for incorporated organic matter to decompose and for slowly available amendments such as limestone to release. To begin, have a soil test done and add the recommended slowly available amendments. Do not add recommended water-soluble granular fertilizer until spring.

Soils, particularly clay soils, should be dry enough to till, but not too dry. To determine if the soil is dry enough, pick up a handful and squeeze it. If the ball of soil falls apart when poked, the soil is dry enough. If it stays in a ball, the soil is too wet for tilling.

When planting in a large area, such as a bed or border, improve all of the soil at one time. To begin, mark off the area that will be tilled. Scoop up the existing vegetation to remove it. Applying a broad spectrum postemergent herbicide 7 to 10 days before tilling will make this easier and kill aggressive perennial weeds. Apply 4 to 6 inches of organic matter, broadcast soil amendments evenly over the area, and incorporate them uniformly to a 12-inch depth. Start at one end with the tiller and go across the soil, one row at a time, while removing rocks and other debris. If the tiller cannot penetrate deeply into the soil, use a shovel to

turn the soil over. The goal is to turn the soil over a shovel length deep, not to break up the clumps; the tiller will do that. Next, till the soil in the direction perpendicular to the first direction and go across the soil as before. When the tilling is done, rake the soil smooth and apply a generous layer of mulch.

Planting

If you're not planting in a large area all at once, but simply adding plants to an existing border or in turf, plant trees and shrubs in individual holes. Dig the hole two to three times wider than the root ball or container and about as deep as the height of the root ball. Roughen the sides and bottom of the hole with a pick or shovel so that roots can penetrate the soil. Water the plant well; it can be difficult to rewet a dry root ball once it is in the ground. To remove the plant from the container, lay the plant on its side with the container end near the hole. Hit the bottom and sides of the container until the root ball loosens. If roots are growing in a circular pattern around the root ball, loosen them by hand or slice through the roots with a knife. This may appear harmful to the plant, but it actually encourages new growth while allowing water to move more freely into the root ball. For root balls wrapped in burlap, remove the string or wire holding the burlap to the root crown. On large trees, it may not be practical to remove all the burlap, but pull away the top one-third. Remove plastic wrapping completely from root balls. Place the root ball in the hole with the top of the root ball (where the roots end and the trunk begins) ½ to 1 inch above the surrounding soil. Lay a board across the planting hole to check the depth of the plant.

Bare root plants should be planted in early spring after the coldest weather is over, but before new growth starts. Whether purchased from a local nursery or by mail order, it is best to establish the plant in the landscape as soon as possible. To start, remove the packing material and soak the roots in tap water for 4 to 6 hours. Make a mound of soil in the middle of the hole and spread the plant's roots out evenly over the mound. Do not set the plant too deep.

The soil removed from the hole is used to backfill around the root ball. No amendments to the backfill are recommended when planting trees and shrubs in individual holes. When backfill soil is enriched with amendments, the roots of plants tend not to grow beyond the isolated environment of the planting hole into native soils. This leads to weak and unstable roots. When filling in with soil around the roots, lightly tamp the soil to collapse air pockets or add water to help settle the soil.

Remember, the goal is to provide plants with a moist, well-drained, and well-aerated soil environment so they will develop an extensive root system capable of withstanding periods of drought.

Mulch

Often, lessons in sustainable landscape practices can be taken from what occurs in nature. Many forests in Alabama have the same dominant feature: an abundance of accumulated forest-floor litter that conserves soil moisture and recycles nutrients back to the plants. Applying a 3- to 5-inch layer of an organic mulch to all nonturf, planted areas in the landscape helps the soil retain water and can reduce losses from

evaporation by up to 70 percent when compared to bare soil. In addition to water retention, mulches have benefits that create an improved soil environment for root growth that, in turn, improves a plant's drought tolerance. These benefits include retarding germination of aggressive weed seeds that compete with ornamental plants for water, keeping the soil cooler in summer and warmer in winter, preventing soil erosion and compaction, improving soil structure and fertility, encouraging microorganism and earthworm proliferation, and giving an attractive, neat appearance to the landscape. Mulches do absorb water from overhead irrigation so, when you water, make sure the water penetrates through the mulch and reaches the soil.

Probably the most widely used mulch for home landscaping in Alabama is pine straw and pine bark. These materials are available at garden centers and mass market stores in convenient-to-handle units. However, obtaining large quantities may necessitate paying a delivery charge or hiring a trucking company. An advantage of pine straw is it looks good in the landscape, but it decomposes fairly quickly and may need re-application annually. Generally, one bale of pine straw covers 50 square feet when applied to a 5-inch depth; however, pine straw bales are not always a consistent size in the marketplace. Fine-textured mulches, such as pine straw, retain more moisture than coarse mulches. On sloping sites, pine straw stays in place better than most other mulches and helps control erosion.

Pine bark should be purchased in a coarse mulch grade. Fine grade pine bark does not suppress weeds very well and can float away during heavy rain. Pine bark looks good in the

landscape and does not decompose as rapidly as pine straw, but costs more. One cubic yard (fourteen 2-cubic-foot bags) of bark mulch covers 100 square feet to a 3-inch depth.

Shredded hardwood products are also good mulches because they mat together and are less likely to float away than chips. Occasionally, wood chips are available as a by-product of lumber operations. Grain straw is the stem of grain crops, typically wheat, gathered and baled after the grain is harvested; it has many of the same properties as pine straw. Be careful about purchasing bails of hay to use as mulch. Hay often contains grass and weed seed that could create a weed problem in the landscape. Landscape fabrics can also be used under mulch to conserve moisture, discourage weeds, and enhance erosion control. Be aware that all organic mulches decompose, shrink in volume, and need replenishing regularly.

Obtaining sufficient quantities of mulch can actually be an exercise in recycling if you are willing to do a little networking and have access to a pickup truck for hauling. Instead of raking up autumn leaves and disposing of them, use the leaves to mulch nonturf, planted beds and around trees in the turf. If leaves are still left over, consider starting a composting program.

Find organic leftovers from the agricultural community to use as mulch. These leftovers, such as peanut hulls, pecan hulls, or even animal bedding, are usually available at no or low cost.

Apply at least 3 inches of nonsettling material, such as pine bark, or 6 inches of material that settles after a rain, such as pine or grain straw. In the case of a bed or border where all the soil is prepared at one time,

cover the entire surface with mulch, except within 8 to 10 inches of the trunk of trees or shrubs. In the case of trees or shrubs located in turf, mulch under the entire canopy of the tree extending well beyond the drip line if possible, but do not pile mulch against the trunk or mulch within a few inches of the trunk. This space will allow for air circulation around the base of the plant and help avoid disease or insect problems.

Efficient Watering

Numerous public awareness surveys have found that homeowners are unaware of the water needs of landscape plants and often overwater them. In addition, overhead sprinkler irrigation systems installed in home landscapes frequently have automated controllers that require little involvement on the part of the homeowner and encourage a set-it-and-forget-it approach. This wastes water, costs money, and may lead to surface water or groundwater contamination by fertilizers or pesticides.

The goal of water-efficient landscapes should be to deliver an adequate amount of water to the root zone of plants just before they experience water stress. When irrigation is used, water should be applied efficiently and effectively to make every drop count. At one extreme, gardeners often apply too little water frequently, causing shallow root growth leading to more rapid plant stress under drought or hot conditions. At the other extreme, gardeners often deliver water too rapidly or run irrigation for too long resulting in water runoff and, depending on the soil type, waterlogged soil conditions. Also, be careful when hand watering because water is often delivered too quickly for the soil to absorb resulting in wasted water as

excess runoff and shallow penetration into the soil. Hand watering is an efficient way to water when using a hose-end water breaker or a spray nozzle to deliver water slowly.

Efficient irrigation should deliver water no faster than the rate the soil can absorb it. Soil types and textures play an important role in how much water soil can hold and how quickly soil can be irrigated. For example, one inch of water applied to the surface of sandy soil may penetrate 10 inches deep, but only penetrates 6 inches deep in a silt loam soil, or only 4 inches deep in clay loam soil. Irrigating the entire root zone of plants growing in heavy soil takes longer than for plants growing in lighter soil. Sandy loams may absorb 0.5 to 3 inches of water per hour while clay loams may absorb only 0.1 to 0.5 inches of water in the same amount of time. Table 1 has the time required for irrigation water to infiltrate up to 6 inches deep in sandy loam or clay loam soil. Moderately moist, clay loam soil requires twice as long to water as sandy loam soil, but, when the clay loam is severely dry, it may require 3 to 4 times as long. The important point is, before you water, dig down and determine if the soil is dry and to what extent. Don't gauge water needs on soil surface appearance, then check the progress of irrigation periodically to determine when sufficient water has been applied.

Plant Establishment

No matter how drought tolerant a plant is reported to be, it will not be unless a sufficient root system develops. For this reason, plants transplanted from containers require a period of careful establishment watering; after all, their roots only extend to the limits of the container,

and they are growing in a mix different from the soil in which they are planted. Because of this interface between soil types, water does not move readily between the different media. Therefore, it is important to apply water to both the container mix and the surrounding soil during the establishment period. Roots grow in soil only where there is moisture, and unless both media are moist, the roots may never grow out of the original container mix. Container mixes also dry much faster than the surrounding soil. Both media should be adequately moistened to prevent newly installed plants from being injured or dying of drought, but be careful not to overwater; do not water if both soils are moist. Many gardeners want to water by a calendar that more often fits their schedule rather than the needs of the plants. By checking soil moisture frequently, you can become in-tune with the rate of soil drying and more accurately predict when a plant needs water.

For plants installed in individual planting holes, construct a berm 4 to 6 inches high around the perimeter of the planting hole to help funnel water to the roots, then fill the berm with water several times to completely saturate the soil and establish good contact at the interface between the container mix and soil. Mulching newly established plants

helps prevent moisture loss. Check the moisture in both soil types at least once a week during the establishment period to see if water is required. When the soil is dry, watering slowly and deeply encourages a more extensive root system than frequent shallow watering.

Fall planted trees, shrubs, vines, ground covers, and herbaceous perennials have demonstrated increased ability to survive moderately low moisture levels the following growing season when compared to those transplanted in the spring or summer. Cool fall temperatures are less stressful to plants than the heat of late spring and summer because the foliage loses less water. Plants established during fall require less frequent irrigation and are less likely to suffer heat-related stress than those planted in spring and summer. As winter approaches, aboveground portions of the plant stop growing and go dormant soon after planting resulting in less demand on the roots for water. Roots, on the other hand, do not go dormant and continue to grow all winter long. So when spring arrives, a healthy, well-developed root system is in place to help the plant adapt better to summer stress.

Trees and shrubs generally require 9 to 10 weeks of establishment care when planted in the late fall or early winter, but those planted in the spring or summer

need establishment care for the entire first growing season. However, there are exceptions. For example, camellias, mountain laurel, and many native azaleas are drought tolerant once established, but because their roots grow slowly, they need 2 years of establishment care to achieve drought tolerance. For this reason, camellias, mountain laurel, and native azaleas are not listed in the tables, but include *Camellia japonica* (Japanese camellia), *Camellia sasanqua* (Sasanqua camellia), *Kalmia latifolia* (mountain laurel), *Rhododendron alabamense* (Alabama azalea), *Rhododendron austrinum* (Florida flame azalea), *Rhododendron canescens* (Piedmont azalea), *Rhododendron flammeum* (Oconee azalea), *Rhododendron perichlymenoides* (Pinxterbloom azalea), *Rhododendron prunifolium* (plumleaf azalea), and *Rhododendron vaseyi* (pinkshell azalea) for those willing to make the effort of establishment. After the establishment period, gradually reduce watering frequency during dry spells to acclimate plants to drought conditions.

Established trees and large shrubs generally have deeper, more extensive roots than other landscape plants and can extract soil moisture even when the soil surface appears dry. The majority of tree and shrub feeder roots (those that take up water and nutrients from the soil) are in the top

Table 1. Time Required for Irrigation Water to Infiltrate Up to 6 Inches Deep in Sandy Loam or Clay Loam Soil

Inches (soil depth)	Sandy loam (hours)	Clay loam (hours)
1	2	4
2	4	8
3	6	10
4	8	12
5	10	14
6	12	16

10 to 12 inches of soil and extend as much as one and a half to two times the canopy diameter. To be most effective, apply water in this area and to this depth. However, trees partly or completely enclosed by large areas of surface concrete or asphalt have more limited access to soil moisture and should be watched closely for signs of water stress. Very large, old trees are often more prone to loss due to drought because of age and accumulated stresses, but the impact of a drought may not be evident until the next growing season. Be more watchful for the watering needs of older trees.

Trees and large shrubs isolated in turf should be watered inside and just outside the drip line and may require water only during periods of limited rainfall or when they show signs of stress. A temporary system, such as a soaker hose, may be all that is required for these plants. Individual lengths of soaker hose can be purchased with brass fittings that easily attach to any hose or hose bib. In foundations or borders, however, it is more convenient to water the entire area, therefore, an irrigation system is more efficient.

Bedding plants, herbaceous perennials, and ground covers are usually small when planted and have small root systems to start with. These plants need 3 to 4 weeks of establishment watering and may have to be watered more often than trees and shrubs to ensure an adequate water supply. Check the soil with a trowel or spade to the depth of the expected root zone. Moisten the entire root zone just before the plants show signs of water stress. If the plants are allowed to wilt severely a few times, growth can be stunted and flower production reduced. Be careful not to overwater because most bedding plants and herbaceous perennials do not

tolerate constantly wet soils well. Porous wall hose or drip irrigation systems can provide adequate water more efficiently than sprinkler systems can.

Drip Irrigation

Using irrigation water efficiently requires proper selection of irrigation methods for the plants and for each hydrozone of the landscape. Drought-tolerant plants should get no more water than they need to look good, and water should be prevented from splashing onto concrete walkways or other areas where it is not needed. Drip irrigation systems allow slow water penetration into the root zone with minimum evaporation or surface wetting. Often, 30 to 50 percent less water may be used with these systems when compared to sprinkler irrigation. Drip systems may be as simple as porous wall hoses that can be moved around the landscape or left in place hidden under mulch for small applications or more extensive systems can be installed using perforated flat tubing or emitters for larger areas. A variety of kits and parts to construct a system are readily available for the do-it-yourself gardener or a system can be installed by a landscape irrigation company.

Drip irrigation applies water from flexible $\frac{3}{8}$ - to $\frac{3}{4}$ -inch-diameter polyethylene distribution pipes to emitters at the ends of microtubes ($\frac{1}{8}$ to $\frac{1}{4}$ inch), flat perforated tubing, or round porous wall hose (soaker hose). Several types of drip irrigation systems can be adapted to suit a variety of applications, from watering individual trees and shrubs to beds of annuals, herbaceous perennials, ground covers, or mixed borders. Because so many different types of drip irrigation components are available, choosing the best system for a particular application requires some planning. The

best advice is to keep the system as simple as possible and try to wet only those areas where water can be taken up by the roots of desired plants.

When planning drip irrigation for watering trees and large shrubs, consider using microsprinkler emitters that wet the soil over a larger area and provide more even watering. Simple drip emitters restrict the soil wetting pattern and are primarily suitable for small trees and shrubs in borders. It is generally best to design a system with a few more emitters than you think necessary to allow insertion wherever water is needed. The appropriate number of emitters per plant and flow rate per emitter depends on the size and type of plant. Generally, the larger the plant, the more water it requires and, thus, more emitters are required.

Drip irrigation systems are usually installed on top of the ground and concealed beneath mulch. This makes the system easy to install and protects the plastic components from ultraviolet light degradation when exposed to sunlight. However, the distribution pipes can also be buried 4 to 6 inches beneath the soil surface with the microtubes protruding above the surface. Extend the microtubes at least 6 inches above ground to allow easy inspection and to prevent dirt from back-siphoning into the emitters and clogging the system. As a starting point, an emitter system may need to be run about three times per week for 4 hours each time during very dry weather to meet the water needs of the plants. Keep in mind that some species require more water than others. Consider this when planning emitter installation.

For watering annuals, perennials, and ground covers, it is usually necessary to irrigate a solid area. This

can be accomplished by spacing emitters 12 to 18 inches apart to achieve a uniform wetting pattern or using perforated tubing or porous wall pipe at the same spacing. In sandy soils, the lines need to be closer together than in fine-textured clay soils. In bedding plant beds, the drip lines can be laid aside for soil preparation and replaced afterward. Cover perforated tubing or porous pipe under mulch to prevent ultraviolet light degradation from exposure to sunlight.

An alternative method of watering uses small sprinkler heads called microsprinklers, instead of emitters. All other components are identical to drip irrigation, including the polyethylene distribution pipes. Microsprinklers cover an area 3 to 12 feet wide and are used for trees and shrubs or beds requiring complete coverage. Do not combine microsprinklers with drip emitters in the same irrigation zone. Microsprinklers are not as efficient as drip emitters because some water evaporation occurs, but they do provide an economical method of achieving uniform watering.

Fertilization

One goal in a water-efficient landscape is to manage vegetative growth so that plants make reasonable progress toward maturity, but grow very little at maturity. At maturity, plants should be fertilized only enough to maintain plant health. The main concern is to avoid overfertilizing because it encourages rapid, soft growth that is more susceptible to drought. Most established, healthy trees and shrubs only need fertilizer once every 2 to 3 years while most established herbaceous perennials

perform well when fertilized every other year. The exceptions are annual flowers and many roses that require annual fertilization to grow and flower well.

Fertilizers with a high nitrogen percentage (first number in a fertilizer analysis) relative to phosphorus and potassium percentages (second and third numbers in a fertilizer analysis) tend to stimulate excessive vegetative growth. When shoot growth increases, root growth decreases, so the roots are less efficient at extracting moisture from the soil. Therefore, look for a fertilizer with a nitrogen percentage equal to or slightly less than the phosphorus and potassium percentages and then apply it at a low rate. The rate information should be printed on the fertilizer container. Just choose the low end of the prescribed rate range. If the rate is not provided, a low rate would be 1 pound of actual nitrogen per 1,000 square feet. To calculate the application rate, divide the nitrogen percentage (the first number) in the analysis into 100. The application rate using a 12-12-12 garden fertilizer is calculated as follows: $100 \div 12 = 8.3$ pounds per 1,000 square feet.

The best time to fertilize plants in the landscape is late winter just before spring growth begins. Fall fertilization is not recommended because it may decrease winter hardiness and high rainfall during typical Alabama winters wash fertilizer out of the root zone. Lastly, do not fertilize plants during a drought period because fertilizers are composed of nutritive salts that can dehydrate and burn roots in the absence of adequate water.

Additional Tips

- Water before the soil dries out on clay soils. Once dry, clay soils are extremely difficult to rewet.

- Remove weeds promptly because they compete for valuable water.
- Avoid summer pruning except to remove dead, diseased, or damaged wood because it encourages new vegetative growth and inhibits root growth.
- Prune plants when they wilt during severe drought stress to save them. Remove about one-third of the canopy to reduce the leaves' demand for moisture.
- Maintain the irrigation system to prevent leaks that waste water.
- Be conscious of the changing water needs of plants through the season, and change irrigation practices accordingly.
- Capture rainwater or recycle water when possible. Rain catchment systems are available.
- Adjust irrigation practices according to sun exposure. North and east exposures need less water than south or west exposures.
- Avoid large areas of light-colored gravel because it reflects heat and can create a microclimate resulting in greater water loss from surrounding plants.
- Consider converting low-traffic turf areas to more drought-tolerant ground covers. Turfgrasses generally require more frequent watering and maintenance than most other landscape plants.
- Terrace steep slopes to reduce runoff erosion and slow water movement so the soil can absorb it.
- Avoid using narrow strips of turf, hard-to-maintain corners, and isolated islands of grass that need special attention.

Drought Tolerance in Plants

Drought tolerance is a difficult plant characteristic to define because it depends not only on a plant's inherent ability to conserve water internally during times of shortage, but also on how well the plant has established a root system and how well the plant can adapt to environmental stresses other than water availability, such as adverse soil conditions, high temperature, high light intensity, variable wind speed, and relative humidity. Drought tolerance does not mean the plants prefer hot, dry weather or that they will not be adversely affected by extended dry weather without some supplemental irrigation. Many plants are drought tolerant because they can shut down growth during extended drought,

therefore, some decrease in growth and flowering can be expected during periods of limited moisture. Severe drought can increase insect or disease incidence, decrease leaf size and number, and cause an overall decline in growth rate and plant vigor. High temperatures and wind, heat and light reflection from nearby hard surfaces, or high fertilization can increase the potentially damaging effects of low moisture on plant growth and survival. Regional differences in drought tolerance in a plant are particularly evident because of varying adaptability to the largely north to south environmental gradient in Alabama. Plants listed in Tables 2 to 10 perform well in the landscape with occasional irrigation (every 2 to 3 weeks during drought) or irrigation only during severe drought, but not regular irrigation.

Plants selected for inclusion in the tables are the consensus of horticultural professionals in the Department of Horticulture at Auburn University, curators of the Huntsville and Mobile Botanical Gardens, and selected agents in the Alabama Cooperative Extension System from different regions of the state. The majority of the plants in the tables are hardy over a wide portion of Alabama; however, plants are included that may only be hardy in the northern or southern one-quarter to one-half of the state. When making plant selections, you should consider adaptability to your area of the state. Many of the species are also represented in the trade by numerous cultivars, which may vary in drought tolerance. These lists should not be construed as complete.

Table 2. Large Canopy Trees

Scientific name	Common name	Native*
Deciduous		
<i>Acer barbatum</i>	Florida maple	y
<i>Acer xfreemanii</i>	'Autumn Blaze'	n
<i>Acer leucoderme</i>	chalk maple	y
<i>Carya glabra</i>	pignut hickory	y
<i>Carya illinoensis</i>	pecan	y
<i>Castanea mollissima</i>	Chinese chestnut	y
<i>Catalpa bignonioides</i>	catalpa	y
<i>Celtis laevigata</i>	sugar hackberry	y
<i>Celtis occidentalis</i>	common hackberry	y
<i>Diospyros virginiana</i>	common persimmon	y
<i>Ginkgo biloba</i>	ginkgo	n
<i>Gleditsia triacanthos</i>	honey locust	y
<i>Juglans nigra</i>	black walnut	y
<i>Liriodendron tulipifera</i>	tuliptree	y
<i>Maclura pomifera</i>	Osage orange	y
<i>Nyssa sylvatica</i>	black gum	y
<i>Pistacia chinensis</i>	Chinese pistache	n
<i>Quercus acutissima</i>	sawtooth oak	n
<i>Quercus alba</i>	white oak	y
<i>Quercus geminata</i>	sand oak	y
<i>Quercus lyrata</i>	overcup oak	y
<i>Quercus macrocarpa</i>	bur oak	y
<i>Quercus marilandica</i>	blackjack oak	y
<i>Quercus muehlenbergii</i>	chinkapin oak	y
<i>Quercus nuttallii</i>	Nuttall oak	y
<i>Quercus prinus</i>	chestnut oak	y
<i>Quercus stellata</i>	post oak	y
<i>Quercus velutina</i>	black oak	y
<i>Sapindus saponaria</i> var. <i>drummondii</i>	soapberry	n
<i>Styphnolobium japonicum</i>	Japanese pagodatree	n
<i>Taxodium ascendens</i>	bald cypress	y
<i>Ulmus parvifolia</i>	Chinese elm	n
<i>Zelkova serrata</i>	Japanese zelkova	n
Evergreen		
<i>Calocedrus decurrens</i>	incense cedar	n
<i>Cedrus deodara</i>	Deodar cedar	y
<i>Cupressus arizonica</i>	Arizona cypress	n
<i>Cupressus sempervirens</i>	Italian cypress	n
<i>Juniperus virginiana</i>	eastern red cedar	y
<i>Magnolia grandiflora</i>	southern magnolia	y
<i>Pinus clausa</i>	sand pine	y
<i>Pinus elliotii</i>	slash pine	y
<i>Pinus glabra</i>	spruce pine	y
<i>Pinus palustris</i>	longleaf pine	y
<i>Pinus strobus</i>	eastern white pine	y
<i>Pinus taeda</i>	loblolly pine	y
<i>Pinus virginiana</i>	Virginia pine	y
<i>Quercus glauca</i>	blue Japanese oak	n
<i>Quercus hemisphaerica</i>	Darlington Oak	y
<i>Quercus laurifolia</i>	laurel oak	y
<i>Quercus virginiana</i>	live oak	y
<i>Thuja orientalis</i>	Oriental arborvitae	n

* Native to Alabama, y = yes or n = no (introduced)

Table 3. Noncanopy Trees

Scientific name	Common name	Native*
Deciduous		
<i>Acer buergerianum</i>	trident maple	n
<i>Acer truncatum</i>	Shantung maple	n
<i>Amelanchier</i> spp. and cultivars	juneberry	y
<i>Asimina triloba</i>	pawpaw	y
<i>Cercis canadensis</i>	eastern redbud	y
<i>Chilopsis linearis</i>	desert willow	y
<i>Clethra pringlei</i>	Mexican sweetspire	n
<i>Cotinus coggygria</i>	common smoketree	n
<i>Cotinus obovatus</i>	American smoketree	y
<i>Crataegus crus-galli</i>	cockspur hawthorn	y
<i>Crataegus marshallii</i>	parsley hawthorn	y
<i>Crataegus mollis</i>	downy hawthorn	y
<i>Cydonia oblonga</i>	fruiting quince	n
<i>Erythrina</i> × <i>bidwillii</i>	hybrid fireman's cap	n
<i>Ilex verticillata</i>	winterberry	y
<i>Koelreuteria paniculata</i>	goldenraintree	n
<i>Lagerstroemia fauriei</i>	Japanese crapemyrtle	n
<i>Lagerstroemia indica</i>	crapemyrtle	n
<i>Magnolia</i> × <i>soulangeana</i>	saucer magnolia	n
<i>Nyssa sylvatica</i>	black gum	n
<i>Oxydendrum arboreum</i>	sourwood	y
<i>Prunus americana</i>	American plum	y
<i>Prunus angustifolia</i>	Chickasaw plum	y
<i>Prunus</i> 'Okame'	Okame cherry	n
<i>Prunus subhirtella</i>	higan cherry	n
<i>Rhamnus caroliniana</i>	Carolina buckthorn	y
<i>Rhus typhina</i>	staghorn sumac	y
<i>Tamarix gallica</i>	French tamarisk	n
<i>Vitex agnus-castus</i>	lilac chastetree	n
<i>Ziziphus jujuba</i>	jujube	n
Evergreen		
<i>Caesalpinia</i> spp.	Bird-of-paradise trees	n
<i>Cupressus arizonica</i> 'Carolina Sapphire'	Arizona cypress	n
<i>Eriobotrya japonica</i>	loquat	n
<i>Ilex</i> × <i>attenuata</i>	'Savannah', 'Foster' holly	n
<i>Ilex</i> 'Nellie R. Stevens'	Nellie R. Stevens holly	n
<i>Ilex opaca</i>	American holly	y
<i>Ilex vomitoria</i>	yaupon	y
<i>Lithocarpus henryi</i>	Henry tanbark oak	n
<i>Loropetalum chinense</i>	Chinese fringetree	n
<i>Myrica cerifera</i>	southern wax myrtle	y
<i>Prunus caroliniana</i>	Carolina cherry laurel	y

* Native to Alabama, y = yes or n = no (introduced)

Table 4. Deciduous Shrubs

Scientific name	Common name	Native*
<i>Aesculus parviflora</i>	bottlebrush buckeye	y
<i>Aesculus pavia</i>	red buckeye	y
<i>Anisicanthus wrightii</i> var. <i>aurea</i>	desert honeysuckle	n
<i>Aronia arbutifolia</i>	red chokeberry	y
<i>Asimina parviflora</i>	smallflower pawpaw	y
<i>Berberis xmentorensis</i>	Mentor barberry	n
<i>Berberis thunbergii</i>	Japanese barberry	n
<i>Callicarpa americana</i>	American beautyberry	y
<i>Callicarpa japonica</i>	Japanese beautyberry	n
<i>Calycanthus floridus</i>	sweetshrub	y
<i>Caryopteris xclandonensis</i>	bluebeard	n
<i>Castanea pumila</i>	Allegheny chinkapin	y
<i>Chaenomeles speciosa</i>	flowering quince	n
<i>Deutzia gracilis</i>	slender deutzia	n
<i>Deutzia scabra</i>	fuzzy deutzia	n
<i>Diervilla rivularis</i>	Georgia bush honeysuckle	y
<i>Diervilla sessilifolia</i>	southern bush honeysuckle	y
<i>Exochorda racemosa</i>	common pearlbrush	n
<i>Ficus carica</i>	fig	n
<i>Forsythia xintermedia</i>	border forsythia	n
<i>Fothergilla gardenii</i>	dwarf fothergilla	y
<i>Hamamelis vernalis</i>	vernal witchhazel	n
<i>Hamelia patens</i>	hummingbird bush	n
<i>Hibiscus syriacus</i>	shrub althea	n
<i>Hydrangea quercifolia</i>	oakleaf hydrangea	y
<i>Ilex decidua</i>	possumhaw	y
<i>Jasminum floridum</i>	Florida jasmine	n
<i>Jasminum mesnyi</i>	primrose jasmine	n
<i>Jasminum nudiflorum</i>	winter jasmine	n
<i>Kerria japonica</i>	Japanese kerria	n
<i>Lespedeza thunbergii</i>	Thunberg's lespedeza	n
<i>Leucothoe racemosa</i>	sweetbells leucothoe	y
<i>Lonicera fragrantissima</i>	winter honeysuckle	n
<i>Magnolia stellata</i>	star magnolia	n
<i>Philadelphus coronarius</i>	sweet mock orange	n
<i>Physocarpus opulifolius</i>	ninebark	n
<i>Poncirus trifoliata</i>	hardy orange	n
<i>Punica granatum</i>	pomegranate	n
<i>Rhus glabra</i>	smooth sumac	y
<i>Rosa</i> 'Knockout'	Knockout rose	n
<i>Rosa</i> 'Nearly Wild'	Nearly Wild rose	n
<i>Russelia equisetiformis</i>	Coral Fountain Plant	n
<i>Spiraea xarguta</i>	garland spirea	n
<i>Spiraea xbumalda</i>	Anthony Waterer spirea	n
<i>Spiraea cantoniensis</i>	Reeves spirea	n
<i>Spiraea prunifolia</i>	bridalwreath spirea	n
<i>Spiraea thunbergii</i>	Thunberg's spirea	n
<i>Spiraea xvanhouttei</i>	Vanhoutte spirea	n
<i>Symphoricarpos orbiculatus</i>	coralberry	y
<i>Ungnadia speciosa</i>	Mexican buckeye	n
<i>Vaccinium arboreum</i>	sparkleberry	y
<i>Vaccinium ashei</i>	rabbiteye blueberry	y
<i>Vaccinium elliotii</i>	Elliott's blueberry	y
<i>Viburnum xburkwoodii</i>	Burkwood viburnum	n
<i>Viburnum dentatum</i>	arrowwood	y
<i>Viburnum prunifolium</i>	blackhaw viburnum	y
<i>Viburnum rufidulum</i>	rusty blackhaw viburnum	y

* Native to Alabama, y = yes or n = no (introduced)

Table 5. Evergreen Shrubs

Scientific name	Common name	Native*
<i>Abelia chinensis</i>	Chinese abelia	n
<i>Abelia xgrandiflora</i>	glossy abelia	n
<i>Acca (Feijoa) sellowiana</i>	pineapple guava	n
<i>Agarista populifolia</i>	Florida leucothoe	y
<i>Aloysia virgata</i>	almond verbena	y
<i>Berberis julianae</i>	wintergreen barberry	n
<i>Berberis xmentorensis</i>	Mentor barberry	n
<i>Buxus microphylla</i> var. <i>japonica</i>	Japanese boxwood	n
<i>Buxus microphylla</i> var. <i>koreana</i>	Korean boxwood	n
<i>Buxus sempervirens</i>	common boxwood	n
<i>Cassia corymbosa</i>	Argentine senna	n
<i>Cassia splendida</i>	fall-blooming senna	n
<i>Cephalotaxus harringtonia</i>	Japanese plum yew	n
<i>Cotoneaster dammeri</i>	bearberry cotoneaster	n
<i>Cotoneaster horizontalis</i>	rockspray cotoneaster	n
<i>Cotoneaster lacteus</i>	brightbead cotoneaster	n
<i>Cotoneaster microphyllus</i>	littleleaf cotoneaster	n
<i>Cytisus scoparius</i>	Scotch broom	n
<i>Ilex xaquipernyi</i>	brilliant holly	n
<i>Ilex xattenuata</i>	many cultivars	n
<i>Ilex cornuta</i> cvs.	Chinese Holly	n
<i>Ilex crenata</i>	'Compacta' and 'Convexa' only	n
<i>Ilex glabra</i>	inkberry holly	y
<i>Ilex xhybrids</i>	many cultivars	n
<i>Ilex latifolia</i>	lusterleaf holly	n
<i>Ilex opaca</i>	American holly	y
<i>Ilex vomitoria</i>	Yaupon holly	y
<i>Illicium parviflorum</i>	small anise-tree	n
<i>Juniperus</i> spp.	many juniper species and cultivars	n
<i>Lonicera fragrantissima</i>	winter honeysuckle	n
<i>Michelia figo</i>	banana shrub	n
<i>Nandina domestica</i>	nandina	n
<i>Nerium oleander</i>	oleander	n
<i>Osmanthus americanus</i>	devilwood	y
<i>Osmanthus xfortunei</i>	Fortune's osmanthus	n
<i>Osmanthus fragrans</i>	sweet olive	n
<i>Osmanthus heterophyllus</i>	holly osmanthus	n
<i>Philadelphus coronarius</i>	sweet mock orange	n
<i>Pittosporum tobira</i>	pittosporum	n
<i>Podocarpus macrophyllus</i>	Chinese podocarpus	n
<i>Pyracantha angustifolia</i> 'Yukon Belle'	Yukon Belle firethorn	n
<i>Pyracantha coccinea</i>	scarlet firethorn	n
<i>Pyracantha crenatoserrata</i>	Chinese firethorn	n
<i>Pyracantha koidzumii</i>	Formosa firethorn	n
<i>Rhabdophyllis indica</i>	Indian hawthorn	n
<i>Rhapidophyllum hystrix</i>	needle palm	n
<i>Rhododendron indicum</i>	southern Indian azalea	n
<i>Rhododendron obtusum</i>	Kurume azalea	n
<i>Sabal palmetto</i>	palmetto palm	y
<i>Serissa foetida</i> 'Kowloon'	Kowloon serissa	n
<i>Sophora secundiflora</i>	Texas mountain laurel	n
<i>Trachycarpus fortunei</i>	windmill palm	n
<i>Viburnum awabuki</i>	mirror leaf viburnum	n
<i>Viburnum luzonicum</i>	Luzon viburnum	n
<i>Viburnum obovatum</i>	Walter's viburnum and 'Densa'	y
<i>Viburnum odoratissimum</i>	sweet viburnum	n
<i>Viburnum 'Pragense'</i>	Prague viburnum	n
<i>Viburnum xrhynchophyloides</i>	lantaphyllum viburnum	n
<i>Viburnum suspensum</i>	Sandankwa viburnum	n
<i>Viburnum tinus</i>	laurustinus	n
<i>Yucca aloifolia</i>	Spanish bayonet	n
<i>Yucca filamentosa</i>	Adam's needle	y
<i>Yucca gloriosa</i>	mound lily yucca	y
<i>Yucca recurvifolia</i>	soft leaf yucca	y

* Native to Alabama, y = yes or n = no (introduced)

Table 6. Vines and Ground Covers

Scientific name	Common name	Native*
<i>Baubinia yunnanensis</i>	pink orchid vine	n
<i>Bignonia capreolata</i>	crossvine	y
<i>Campsis radicans</i>	trumpet creeper	y
<i>Campsis ×tagliabuana</i>	hybrid trumpet creeper	n
<i>Clitoria mariana</i>	butterfly pea	y
<i>Clitoria ternatea</i>	blue pea vine	n
<i>Euonymus fortunei</i> ‘Coloratus’	wintercreeper euonymus	n
<i>Gelsemium sempervirens</i>	Carolina jessamine	y
<i>Juniperus conferta</i>	shore juniper	n
<i>Juniperus davurica</i>	Parson’s juniper	n
<i>Juniperus horizontalis</i>	creeping juniper	n
<i>Juniperus procumbens</i>	Japanese garden juniper	n
<i>Lathyrus latifolius</i>	everlasting pea	n
<i>Liriope muscari</i>	lilyturf	n
<i>Liriope spicata</i>	spreading lilyturf	n
<i>Lonicera ×beckrottii</i>	goldflame honeysuckle	n
<i>Lonicera sempervirens</i>	coral honeysuckle	y
<i>Ophiopogon japonicus</i>	mondograss	n
<i>Parthenocissus quinquefolia</i>	Virginia creeper	y
<i>Parthenocissus tricuspidata</i>	Boston ivy	n
<i>Passiflora incarnata</i>	maypop	y
<i>Quisqualis indica</i>	Rangoon creeper vine	n
<i>Rosa banksiae</i>	Lady Banks rose	n
<i>Senecio confusus</i>	Mexican flame vine	n
<i>Smilax smallii</i>	Jackson vine	y
<i>Thunbergia alata</i>	black-eyed Susan vine	n
<i>Trachelospermum asiaticum</i>	Asiatic jasmine	n
<i>Trachelospermum jasminoides</i>	confederate jasmine	n
<i>Vinca major</i>	greater periwinkle	n
<i>Vinca minor</i>	lesser periwinkle	n
<i>Vitis rotundifolia</i>	muscadine	y
<i>Wisteria frutescens</i>	American wisteria	y

* Native to Alabama, y = yes or n = no (introduced)

Table 7. Annuals or Biennials

Scientific name	Common name
<i>Angelonia angustifolia</i>	summer snapdragon
<i>Arctotis ×hybrida</i>	blue-eyed African daisy
<i>Argemone grandiflora</i>	showy pricklypoppy
<i>Argemone mexicana</i>	Mexican poppy
<i>Asclepias curassavica</i>	bloodflower
<i>Begonia ×semperflorens cultorum</i>	wax begonia (not in full sun)
<i>Berlandiera lyrata</i>	chocolate daisy
<i>Calandrinia umbellata</i>	rock purslane
<i>Carthamus tinctorius</i>	safflower
<i>Castilleja indivisa</i>	Indian paintbrush
<i>Catharanthus roseus</i>	annual vinca
<i>Celosia argentea</i> var. <i>plumosa</i> or <i>cristata</i>	plumed or crested cock's comb
<i>Celosia spicata</i>	wheat cock's comb
<i>Convolvulus tricolor</i>	dwarf morning glory
<i>Coreopsis tinctoria</i>	calliopsis
<i>Cosmos bipinnatus</i>	tall cosmos
<i>Cosmos sulphureus</i>	sulphur cosmos
<i>Dianthus barbatus</i>	sweet william
<i>Dracopis amplexicaulis</i>	clasping coneflower
<i>Eschscholzia californica</i>	California poppy
<i>Euphorbia marginata</i>	snow-on-the-mountain
<i>Eustoma grandiflorum</i>	lisianthus, prairie gentian
<i>Gaillardia ×grandiflora</i>	blanket flower
<i>Gazania rigens</i>	treasure flower
<i>Gomphrena globosa</i>	globe amaranth
<i>Helianthus annuus</i>	annual sunflower
<i>Helichrysum bracteatum</i>	strawflower
<i>Leonotis nepetifolia</i>	lion's ear
<i>Limonium sinuatum</i>	annual statice
<i>Melampodium paludosum</i>	medallion flower
<i>Mirabilis jalapa</i>	four o'clock flower
<i>Nolana paradoxa</i>	Chilean bellflower
<i>Perilla frutescens</i>	shrubby perilla
<i>Portulaca grandiflora</i>	moss rose
<i>Portulaca oleracea</i>	purslane
<i>Ricinus communis</i>	castor bean (toxic)
<i>Sanvitalia procumbens</i>	Mexican creeping zinnia
<i>Scaevola aemula</i>	fan flower
<i>Senecio cineraria</i>	dusty miller
<i>Verbascum bombyciferum</i>	nettle-leaved mullein
<i>Zinnia angustifolia</i>	narrowleaf zinnia
<i>Zinnia haageana</i>	Mexican zinnia
<i>Zinnia marylandica</i>	'Profusion' series zinnia

Table 8. Herbaceous Perennials

Scientific name	Common name
<i>Achillea</i> ×'Coronation Gold'	Coronation Gold yarrow
<i>Achillea filipendulina</i>	fernleaf yarrow
<i>Achillea</i> ×'Moonshine'	Moonshine yarrow
<i>Agapanthus africanus</i>	agapanthus
<i>Alyssum montanum</i>	creeping basket-of-gold
<i>Amsonia tabernaemontana</i>	eastern bluestar
<i>Armeria maritima</i>	common thrift
<i>Artemisia</i> spp.	wormwood
<i>Asclepias tuberosa</i>	butterfly weed
<i>Aspidistra elatior</i>	cast-iron plant
<i>Aster</i> spp.	fall asters (some)
<i>Aurina saxatilis</i>	basket-of-gold
<i>Baptisia alba</i>	white false indigo
<i>Baptisia australis</i>	false blue indigo
<i>Baptisia carolina</i>	false indigo
<i>Baptisia tinctoria</i>	wild indigo
<i>Belamcanda chinensis</i>	blackberry lily
<i>Ceratostigma plumbaginoides</i>	plumbago
<i>Chrysopsis villosa</i>	golden aster
<i>Coreopsis auriculata</i> 'Nana'	mouse ear coreopsis
<i>Coreopsis grandiflora</i>	tickseed
<i>Coreopsis lanceolata</i>	lance coreopsis
<i>Crocasmia</i> × <i>crocosmiiflora</i>	montbretia
<i>Cuphea llavea</i>	bat face cuphea
<i>Delosperma ashtonii</i>	Ashton's ice plant
<i>Delosperma cooperi</i>	hardy ice plant
<i>Delosperma nubigenum</i>	orange-yellow hardy ice plant
<i>Dianthus deltoides</i>	maiden pink
<i>Dianthus gratianopolitanus</i>	cheddar pink
<i>Dianthus plumarius</i>	cottage pink
<i>Echinacea angustifolia</i>	prairie coneflower
<i>Echinacea paradoxa</i>	yellow coneflower
<i>Echinacea purpurea</i>	purple coneflower
<i>Echinacea tennesseensis</i>	Tennessee coneflower
<i>Epimedium</i> spp.	epimedium
<i>Erythrina herbacea</i>	coralbean
<i>Eupatorium havanense</i>	white mist flower
<i>Guara lindheimeri</i>	guara
<i>Heliopsis helianthoides</i>	false sunflowers
<i>Helleborus foetidus</i>	bear's foot hellebore
<i>Helleborus orientalis</i>	Lenten rose
<i>Hemerocallis</i> spp.	daylily
<i>Iris cristata</i>	crested iris
<i>Iris</i> hybrids	bearded irises
<i>Iris pallida</i>	dalmatian iris
<i>Iris sibirica</i>	Siberian iris
<i>Kniphofia hirsuta</i>	dwarf red hot poker
<i>Kniphofia uvaria</i>	red hot poker
<i>Lantana camara</i>	shrub verbena
<i>Lantana montevidensis</i>	trailing lantana
<i>Liatris spicata</i>	spike blazing star
<i>Linum</i> spp.	flax
<i>Lychnis coronaria</i>	rose campion
<i>Oenothera fruticosa</i>	sundrop

<i>Oenothera macrocarpa</i>	Missouri evening primrose
<i>Opuntia compressa</i>	eastern pricklypear cactus
<i>Perovskia atriplicifolia</i>	Russian sage
<i>Phlomis</i> 'Edward Bowles'	hybrid Jerusalem sage
<i>Phlomis fruticosa</i>	Jerusalem sage
<i>Phlomis russeliana</i>	Jerusalem sage
<i>Phlomis tuberosa</i>	tuberous Jerusalem sage
<i>Phlox subulata</i>	creeping phlox
<i>Pycnanthemum virginianum</i>	mountain mint
<i>Rudbeckia fulgida</i>	black-eyed susan
<i>Rudbeckia laciniata</i>	cutleaf coneflower
<i>Rudbeckia maxima</i>	great coneflower
<i>Rudbeckia nitida</i>	shining coneflower
<i>Ruellia brittoniana</i>	Mexican petunia
<i>Salvia greggii</i>	Texas sage
<i>Salvia guaranitica</i>	blue anise sage
<i>Salvia leucantha</i>	Mexican sage
<i>Salvia microphylla</i>	baby sage
<i>Salvia reptans</i>	cobalt sage
<i>Salvia texana</i>	blue Texas sage
<i>Santolina chamaecyparissus</i>	lavender cotton
<i>Santolina rosmarinifolia</i>	green santolina
<i>Sedum</i> spp.	stonecrop
<i>Silene caroliniana</i>	wild pink
<i>Solidago</i> hybrids	'Cloth of Gold', 'Crown of Rays' Goldenrod
<i>Solidago canadensis</i>	Canada goldenrod
<i>Solidago rugosa</i>	wrinkle-leaf goldenrod
<i>Spigelia marilandica</i>	Indian pink
<i>Stachys byzantina</i>	lamb's ears
<i>Verbascum phoeniceum</i>	purple mullein
<i>Verbascum thapsus</i>	common mullein
<i>Verbena bonariensis</i>	purpletop vervain
<i>Verbena canadensis</i>	rose verbena
<i>Verbena rigida</i>	sandpaper verbena
<i>Verbena tenuisecta</i>	moss verbena
<i>Vernonia altissima</i>	tall ironweed
<i>Veronica prostrata</i>	prostrate speedwell
<i>Veronica repens</i>	creeping speedwell

Table 9. Herbs

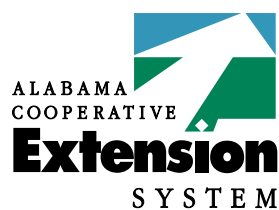
Scientific name	Common name	*
<i>Agastache foeniculum</i>	anise hyssop	p
<i>Allium schoenoprasum</i>	chives	p
<i>Allium tuberosum</i>	garlic chives	p
<i>Artemisia abrotanum</i>	southernwood	p
<i>Borago officinalis</i>	borage	a
<i>Calamintha nepeta</i>	calamint	p
<i>Eucalyptus cineræ</i>	silver dollar tree	a/p
<i>Foeniculum vulgare</i>	fennel	p
<i>Lavandula angustifolia</i>	English lavender	p
<i>Laurus nobilis</i>	bay	a/p
<i>Lavandula stoechas</i>	Spanish lavender	p
<i>Marrubium vulgare</i>	horehound	p
<i>Matricaria recutita</i>	false camomile	a
<i>Nepeta cataria</i>	catnip	p
<i>Nepeta xfaassenii</i>	catmint	p
<i>Nepeta racemosa</i>	Persian catmint	p
<i>Origanum laevigatum</i>	ornamental oregano	p
<i>Origanum marjorana</i>	sweet marjoram	a
<i>Origanum onites</i>	pot oregano	p
<i>Origanum vulgare</i>	wild oregano	p
<i>Rosemarinus officinalis</i>	rosemary	p
<i>Ruta graveolens</i>	rue	p
<i>Saponaria officinalis</i>	soapwort	p
<i>Satureja montana</i>	winter savory	p
<i>Tagetes lucida</i>	Mexican tarragon	p
<i>Tanacetum parthenium</i>	feverfew	p
<i>Teucrium chamaedrys</i>	wall germander	p
<i>Thymus camphoratus</i>	camphor Thyme	p
<i>Thymus xcitriodorus</i>	lemon thyme	p
<i>Thymus herba-barona</i>	caraway-scented thyme	p
<i>Thymus praecox ssp. arcticus</i>	mother-of-thyme	p
<i>Thymus pseudolanuginosus</i>	wooly thyme	p
<i>Thymus vulgaris</i>	garden thyme	p
<i>Tulbaghia violacea</i>	society garlic	p

* a = annual, p = perennial, or a/p = perennial treated as an annual depending on hardiness zone

Table 10. Ornamental Grasses

Scientific name	Common name	Native*
<i>Andropogon gerardii</i>	big bluestem	y
<i>Andropogon ternarius</i>	splitbeard bluestem	y
<i>Andropogon virginicus</i>	broom sedge	y
<i>Bouteloua gracilis</i>	blue gammagrass	y
<i>Briza media</i>	quaking grass	n
<i>Chasmanthium latifolium</i>	upland sea oats	y
<i>Cortaderia sellowiana</i>	pampas grass	n
<i>Eragrostis curvula</i>	weeping love grass	n
<i>Eragrostis elliottii</i>	Elliott's love grass	y
<i>Eragrostis spectabilis</i>	purple love grass	y
<i>Hystrix patula</i>	bottlebrush grass	y
<i>Leymus arenarius</i>	blue lyme grass	n
<i>Miscanthus 'Giganteus'</i>	giant silvergrass	n
<i>Miscanthus sinensis</i>	Japanese silvergrass (sterile cultivars only)	n
<i>Muhlenbergia filipes</i>	gulf muhly	y
<i>Muhlenbergia lindheimeri</i>	muhly grass	y
<i>Muhlenbergia rigens</i>	deer grass	y
<i>Muhlenbergia capillaris</i>	pink muhly grass	y
<i>Nassella tenuissima</i>	Mexican feather grass	y
<i>Panicum virgatum</i>	switchgrass	y
<i>Saccharum ravennae</i>	Ravenna grass	n
<i>Schizachyrium scoparium</i>	little bluestem	y
<i>Stipa gigantea</i>	giant feather grass	n

* Native to Alabama, y = yes or n = no



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