



Landscape Design, Plant Materials & Energy Conservation



Mississippi Smart Landscapes

Mississippi State University Extension Service





Planting



Landscaping surrounding your home can help reduce heating and cooling costs, while raising the value of your property.

Shade Trees



Carefully positioned shade trees can not only add beauty to your property but can also reduce both your summer and winter energy costs.

Shaded Driveway



Plant trees to provide summer shade for parking areas and driveways

Green Wall



A green wall can provide shade and reduce energy consumption

Green Roofs



A green roof can reduce high summer heat temperatures on structures by as much as 20 degrees Fahrenheit

image : Allison H. Anderson

Landscaping to Conserve Energy



Proper Landscaping

Too frequently people do not use landscape plants to conserve energy. Proper placement of trees, shrubs, and vines around a house conserves energy while adding beauty. Trees are the number-one landscape plant used in energy conservation in the home landscape.

Trees placed properly within the landscape can be as effective as other home improvements in reducing heating and cooling costs. Good selection and placement of trees within the landscape can help cool your house in summer and allow the sun's rays to warm your house in winter. They also can absorb carbon dioxide, reduce the greenhouse effect, and produce oxygen for us to breathe. Trees and other plants can shade houses and office buildings. This benefit reduces air conditioning needs up to 30 percent because less electricity is required for cooling.

Trees can add to the value of property, as well. Well-landscaped property has more curb appeal and can increase residential property values up to 15 percent over property that is not landscaped.

To install properly an energy conserving landscape, you must understand the different positions of the sun at various times of the year. Figure 1 shows the movement of the sun in mid-December (winter solstice). Notice that the sun rises in the southeast and remains low in the sky during the day. The winter sun sets in the southwest. Figure 2 shows the position of the sun on June 22 (summer solstice). The sun rises in the northeast and appears higher overhead at midday. The sun sets in the northwest during summer.

Planning for Summer Shade

Place trees around the house to provide shade

Solar Angle for 32° Latitude North

Figure 1

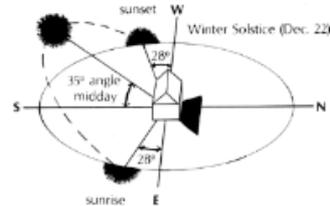
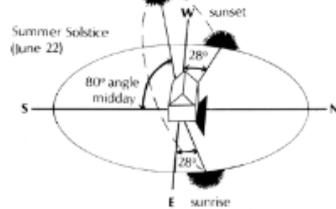


Figure 2



Planning for Winter Sun

Effective tree placement will allow the winter sun

TREES TO INCREASE YOUR HOME'S ENERGY EFFICIENCY

Shade trees reduce energy demands.

Evergreen trees located north & west of your house block winter winds.

Deciduous trees give shade in summer & allow for cooling breezes. In winter, they allow sun to warm your home.



THE BASIS FOR CREATING A “SUCCESSFUL” LANDSCAPE

Learn all you can about your planting site, i.e. soil, moisture, drainage patterns, sun/shade

So you can choose the plants best for your site’s unique environmental conditions.

DESIGN GUIDELINES FOR CREATING “SMART LANDSCAPES”

Home Landscape Design

MISSISSIPPI STATE UNIVERSITY EXTENSION



A well-designed and functional home landscape can add to your family's joy and increase the value of your property. Modern landscapes are meant to be beautiful and useful. A well-planned landscape provides your family with recreation, privacy, and pleasure. Conscientious homeowners know that the

Figure 1. Front landscape. Drawing by Richard Martin III.

Locate plants where they have ample room to grow to maturity.

Research your plants' mature size & locate appropriately.

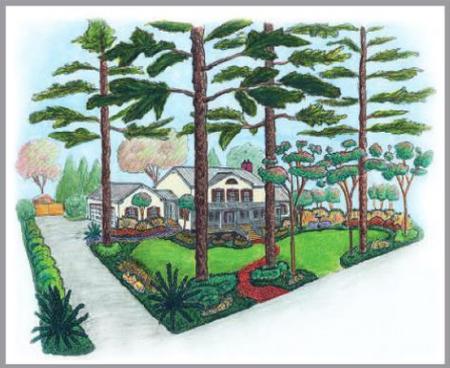
Group plants according to like needs (light, moisture, soils).

DESIGN GUIDELINES FOR CREATING “SMART LANDSCAPES”

Home Landscape Design

MISSISSIPPI STATE UNIVERSITY
EXTENSION

HOME HORTICULTURE



A well-designed and functional home landscape can add to your family's joy and increase the value of your property. Modern landscapes are meant to be beautiful and useful. A well-planned landscape provides your family with recreation, privacy, and pleasure. Conscientious homeowners know that the

Figure 1. Front landscape. Drawing by Richard Martin III.

Reduce unused lawn areas

Select perennials over annuals

Avoid high-maintenance plants

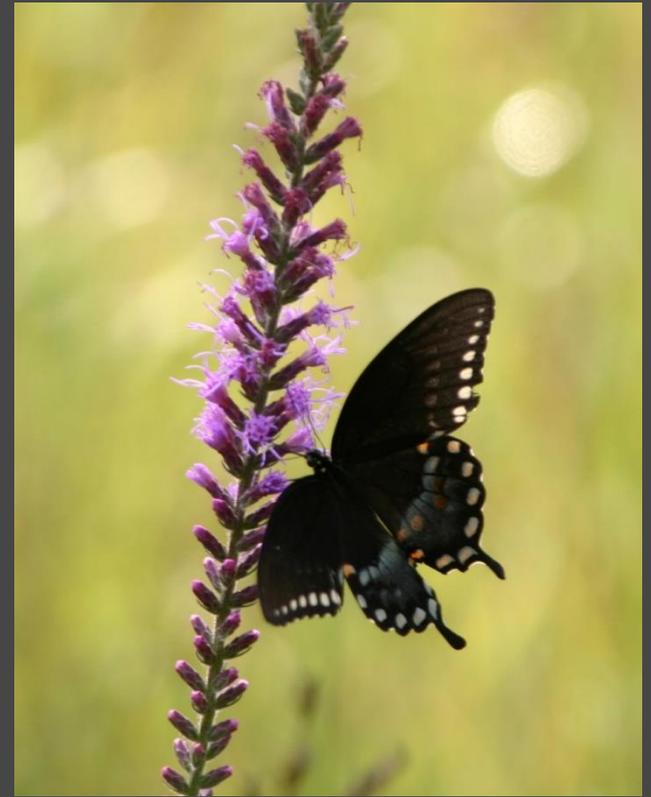
Do not crowd plant material

Use quality, long-lasting materials

Why Native Plants Matter

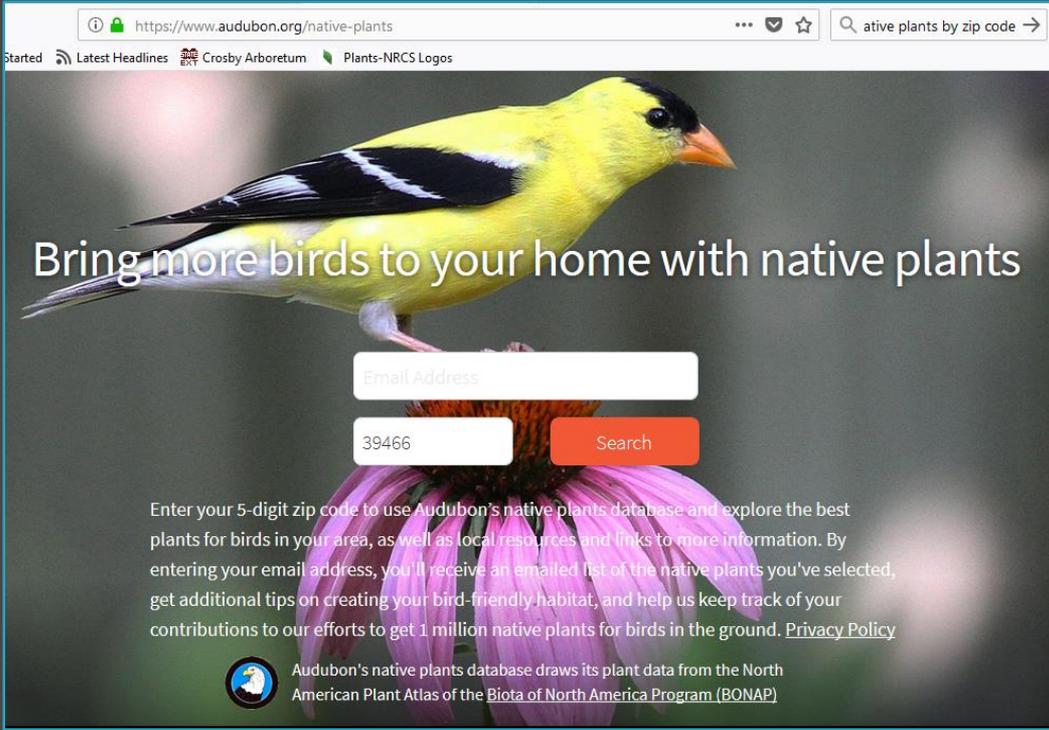
Because native plants are adapted to local environmental conditions, they require far less water, saving time, money, and perhaps the most valuable natural resource, water. In addition to providing vital habitat for birds, many other species of wildlife benefit as well.

<https://www.audubon.org/>



Liatris spicata

Search for native plants by ZIP CODE! <https://www.audubon.org/native-plants>
Enter your ZIP CODE to see a list of the native plants suited to your area.



Bring more birds to your home with native plants

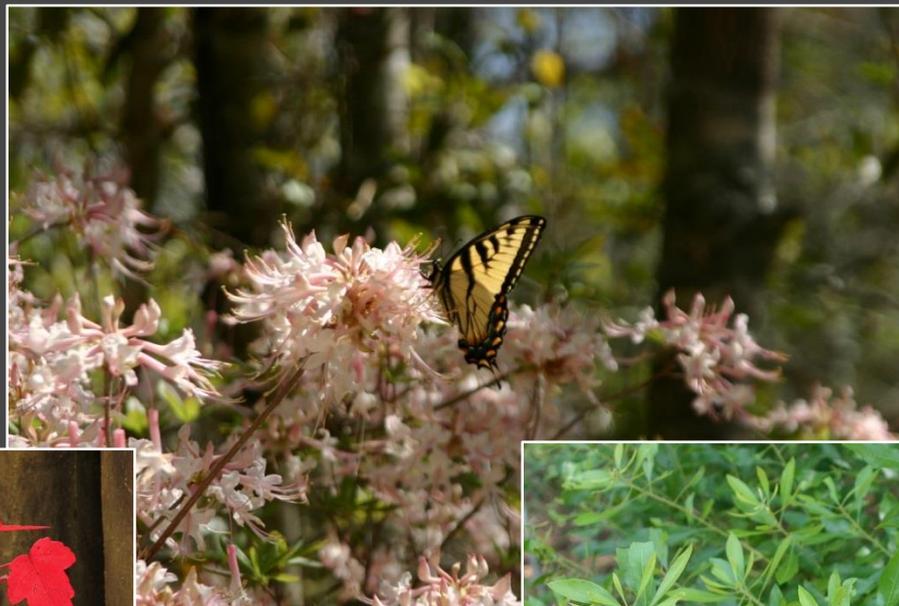
Email Address

39466 Search

Enter your 5-digit zip code to use Audubon's native plants database and explore the best plants for birds in your area, as well as local resources and links to more information. By entering your email address, you'll receive an emailed list of the native plants you've selected, get additional tips on creating your bird-friendly habitat, and help us keep track of your contributions to our efforts to get 1 million native plants for birds in the ground. [Privacy Policy](#)

 Audubon's native plants database draws its plant data from the North American Plant Atlas of the Biota of North America Program (BONAP)

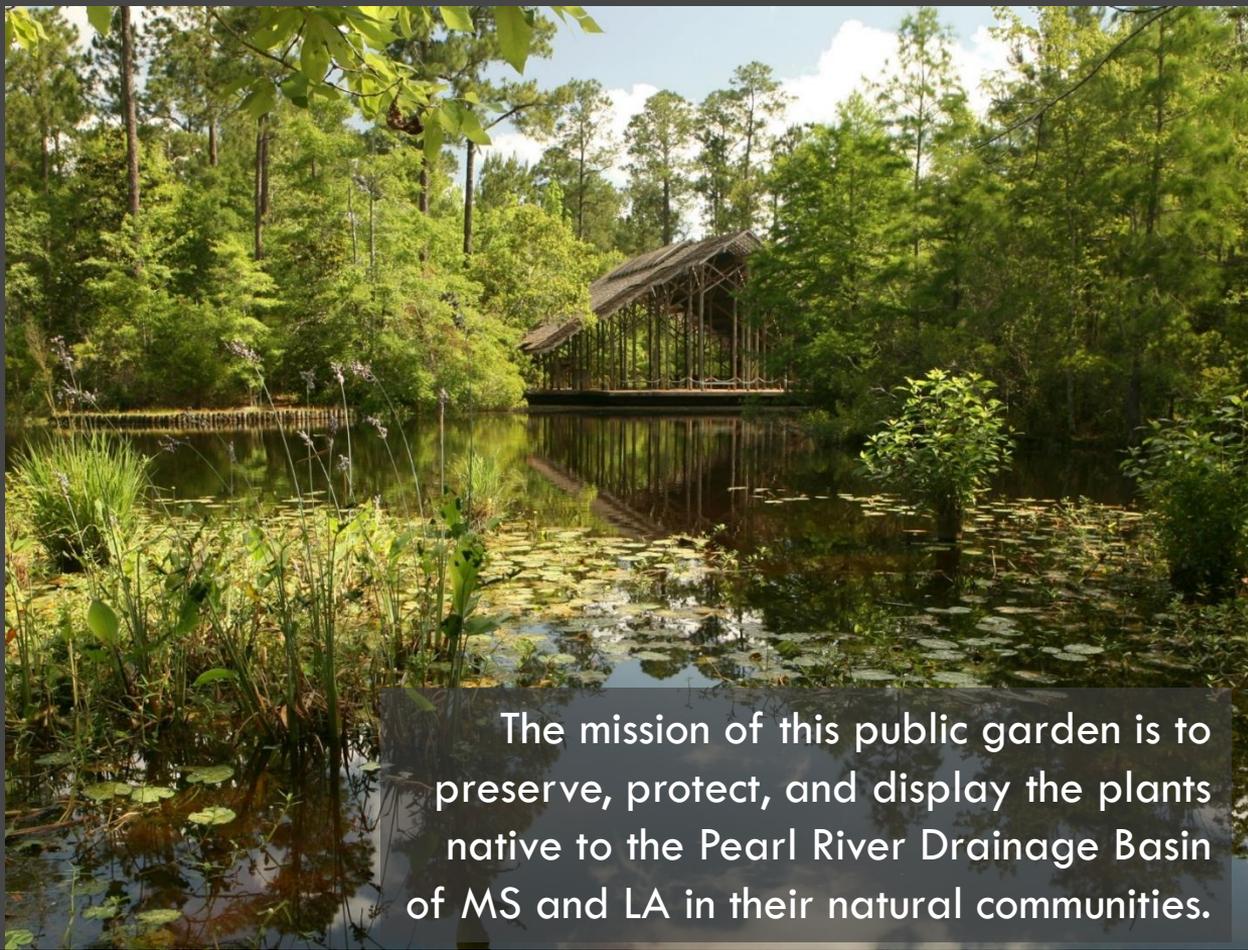
Audubon's native plants database draws its plant data from the North American Plant Atlas of the [Biota of North America Program \(BONAP\)](#)



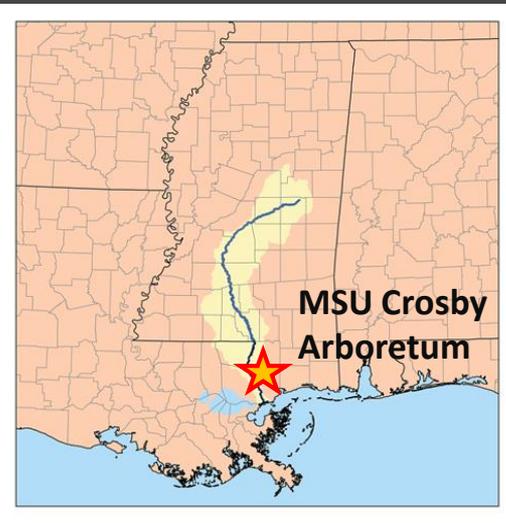


Crosby Arboretum Spring Native Plant Sale





The mission of this public garden is to preserve, protect, and display the plants native to the Pearl River Drainage Basin of MS and LA in their natural communities.



Pearl River Drainage Basin

Mississippi State University's Crosby Arboretum is located in Picayune, MS (Pearl River Co.)



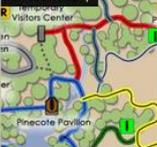
Pinecote Pavilion



Directions



Arboretum Map



The Crosby Arboretum

The Crosby Arboretum is dedicated to educating the public about their environment. This mission is carried out by preserving, protecting, and displaying plants native to the Pearl River Drainage Basin ecosystem, providing environmental and botanical research opportunities, and offering cultural, scientific, and recreational programs. The Arboretum displays three basic habitats found in this ecosystem. They are a Savanna exhibit, a Woodland exhibit, and an Aquatic exhibit. Both drastic and subtle changes in landscape patterns can be observed within each exhibit. In addition to the 104-acre interpretive site, the Arboretum also collectively maintains 700 acres of off-site natural areas that are preserved for scientific study.

Event Calendar



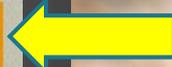
Become a Member



New Education Center



Blooming plants in the Arboretum Exhibits connect visitors with the land's seasonal changes



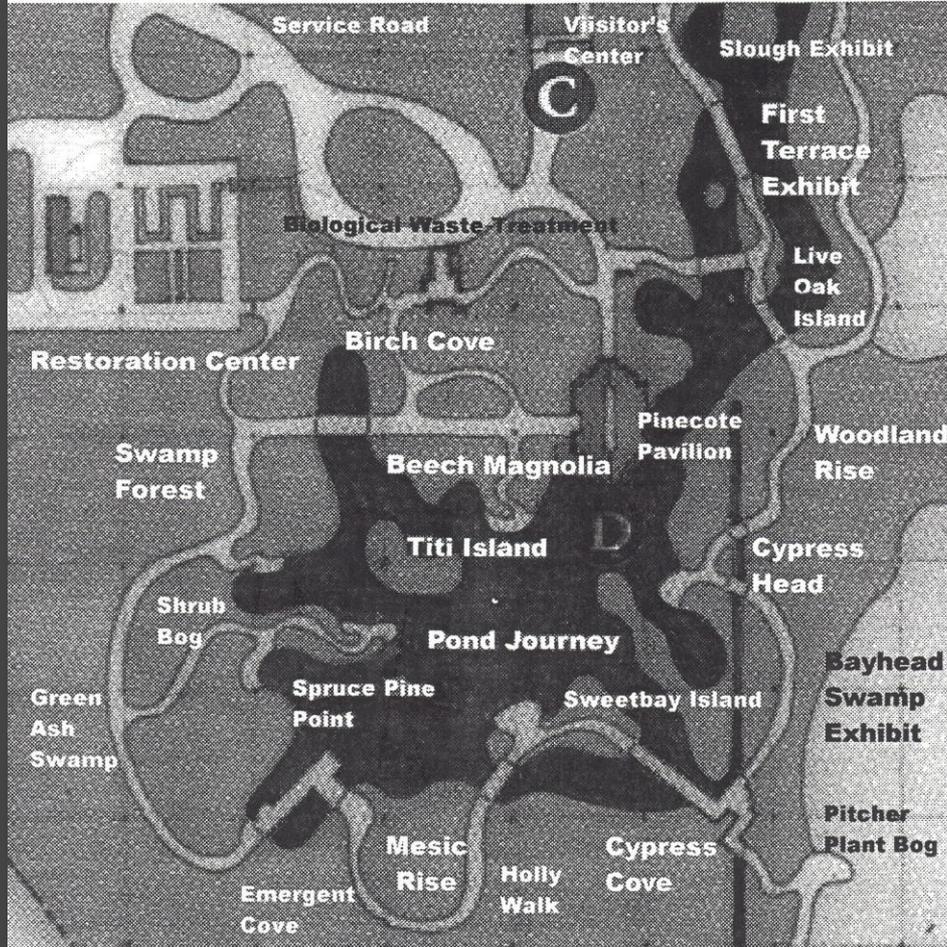


The Crosby Arboretum

64 ACRES OF NATIVE PLANT EXHIBITS

-  Woodland (40 ac)
-  Aquatic (4 ac)
-  Savanna (20 ac)





Flame Azalea



Witch Hazel



Mountain Laurel

SITE INVENTORY:

Identify your existing plants & learn all you can about them:

- Health
- Growth rate
- Is there room for mature growth
- Hazard trees
- Invasive species
- Problem weeds
- Insect pests





Swamp Milkweed and Firespike in the Crosby Arboretum Pollinator Garden



Ilex decidua 'Warren's Red'



Install plants in late fall & winter to allow for optimum plant establishment.

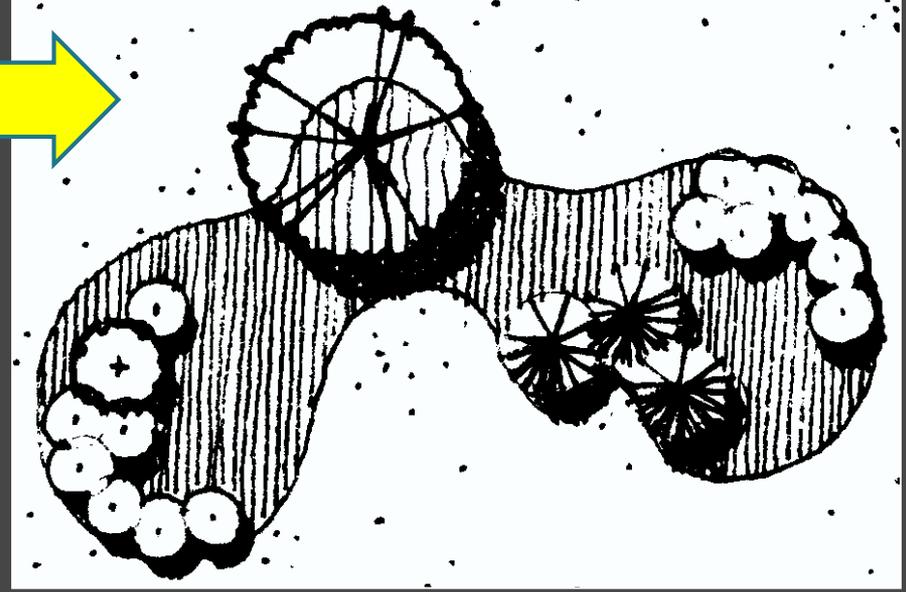
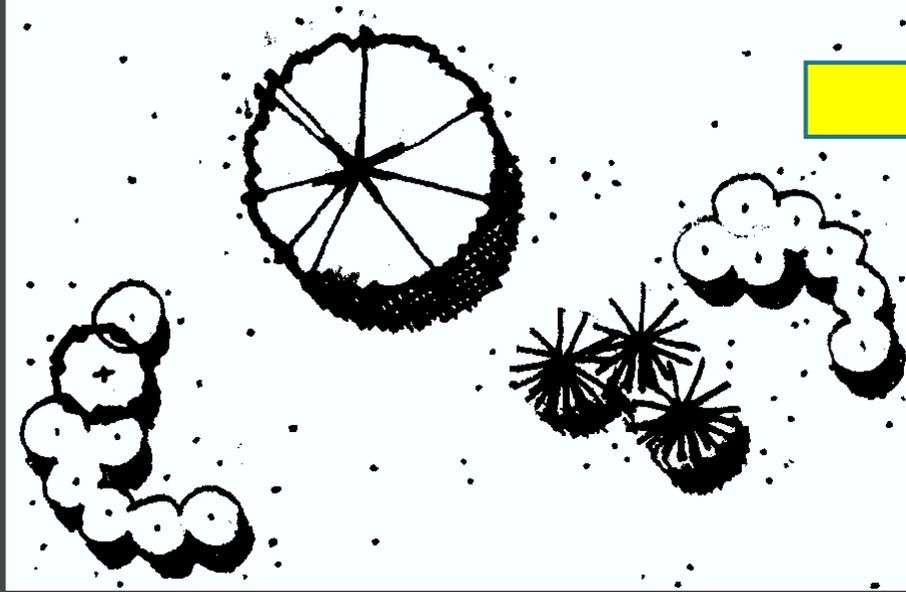














Photos courtesy of Sharon Swope, Pennsylvania Master Gardeners Training Module



MAKE A DIFFERENCE: PLANT A NATIVE TREE!

Plant Families Supporting the Highest No. of *Lepidoptera* spp.

| | |
|-----------|-----|
| Oak | 557 |
| Cherry | 456 |
| Willow | 455 |
| Birch | 411 |
| Crabapple | 308 |
| Maple | 297 |
| Blueberry | 294 |
| Hickory | 235 |
| Elm | 215 |
| Pine | 201 |



SOUTHERN CRABAPPLE (*Malus angustifolia*)

Source: *Bringing Nature Home*, by Doug Tallamy



Plant trees to reduce energy costs by shading your house. Shade also reduces watering & weeding needs.





Drake Elm



Crape Myrtle 'Tuscarora'



Native Shrubs for Mississippi Landscapes



There are 30 shrub species native to Mississippi that can be successfully used in home landscapes. The following descriptions of each species include:

- Native habitats
- Flowering, fruit, leaf, and form characteristics
- Wildlife values

Each listing also contains cultural tips and effective landscape uses. While many of these plants tolerate conditions not found in their native environments, it is always preferable to choose plants that are best suited to the site. Wholesale nurseries in your area may produce some of these plants; ask the manager about availability.

Red Buckeye
Aesculus pavia L.
Family: Hippocastanaceae



yellow in the fall. For a natural look, plant the buckeye in shrub masses underneath trees that form a canopy.

Sunlight: Part sun to shade
Soil type: Dry to moist
Shrub type: Deciduous
Wildlife value: Medium
Flowering: Spring flowers

Tag Alder
Alnus serrulata (Ait.) Willd.
Family: Betulaceae





Vaccinium elliotii



Viburnum dentatum



Callicarpa americana





Itea virginica



Native Trees for Mississippi Landscapes



The use of indigenous trees in homes, gardens, and communities is not new to Mississippi. Indigenous trees form the very fabric of our surroundings and create our state's own unique regional identity. Even noted Mississippi authors Eudora Welty and William Faulkner recognized the importance of Mississippi's native flora and landscapes to help create a sense of place in their writings.

Selecting native trees for the home landscape is a wise choice. In addition to their beauty, there are several additional reasons to use Mississippi's native trees.

- Native trees are better adapted to Mississippi's soils. Mississippi's predominantly acidic mineral soils make it difficult for many ornamental trees from other areas to perform well. Native trees are better adapted to our varying soil types.
- Native trees are better adapted to Mississippi's climate. Local trees are better suited to the average temperature and rainfall patterns found in our state.

access to irrigation and care. Trees that are tolerant of these growing conditions are the best choice.

The following list describes 40 tree species native to Mississippi, all of which have performed well in a variety of urban landscapes. These plants were chosen for their durability, ornamental qualities, wildlife value, and tolerance to a wide spectrum of soil, moisture, and sun exposure. Many are familiar features of Southern landscapes; others are not as common but deserve greater consideration for ornamental use. Each tree species description includes:

1. Native habitats
2. Associate plant species
3. Flowering, fruit, leaf, and form characteristics
4. Wildlife values
5. Cultural tips
6. Effective landscape uses



Crataegus marshallii



Chionanthus virginicus

Tough & Attractive Natives: Grancy Graybeard



Quercus michauxii



Taxodium distichum



Morella cerifera

Acer rubrum





Magnolia virginiana



Malus angustifolia

Wildflowers for Mississippi Meadows and Gardens



Those uncultivated flowers found growing naturally along roadsides, in meadows and fields, and in forests throughout an area are called wildflowers. Wildflowers include a wide variety of plant types, including reseeding flowering annuals and hardy perennials, selected vines and small shrubs, ferns, and even showy native grasses. Many are well-suited for use in home gardens and landscapes because they are adapted to the general climate and soils of an area. With a little planning, you can easily plant and enjoy them for years.

Some wildflowers are perfectly useful in formal plantings and gardens where neatness is important; however, most are better suited for use in informal, meadow-

or as true perennials from bulbs, corms, roots, stems, or rhizomes.

There are no "maintenance-free" gardens. Because wildflowers have a natural ability to spread vigorously, many may become rampant invaders requiring some control. Many weedy, less desirable plants also appear in wildflower gardens and require removal, making even wildflowers "low-maintenance" at best. Winter mowing of wildflower meadows, regular pruning of faded foliage and dead seed stalks, careful use of selected herbicides, and other general gardening techniques are necessary to ensure success and enjoyment from the use of wildflowers in the landscape.

Site Selection

Success with wildflowers depends mostly



Extension Publications: <http://extension.msstate.edu/>



Rudbeckia spp.



Echinacea purpurea



Stokesia laevis





Liatris spicata



Asclepias incarnata









Lonicera sempervirens



Host plant for Gulf
Fritillary Caterpillars



Passiflora incarnata







Home Landscape Design

MISSISSIPPI STATE UNIVERSITY
EXTENSION



Figure 1. Front landscape. Drawing by Richard Martin III.

Selecting Landscape Trees

With Special Comments on Invasive and Native Plants



Figure 1. Trees have many roles in the home's landscape. They are used extensively for screening and shading the home. They help create a background for other plantings and help provide a screen or barrier along the property lines. Low-growing trees can be used as foundation plants near the home, and unusual trees are often used as specimen plants like those on each side of the front steps. Trees also are used to provide a haven to attract wildlife.

igned and functional ndscape can add to nily's joy and lue of your property. apes are meant to be useful. A well-ape provides your reation, privacy, and cientious homeowners know that the

Selecting Landscape Shrubs

With Special Comments on Invasive and Native Plants



Figure 1. Shrubs have many roles in the home's landscape. They are used extensively in the foundation planting around the base of the home. They create a background for other plantings and provide a screen or barrier along the property lines. Low-growing shrubs are used to edge the landscape beds in front of the garage. The low shrubs at the entrance of the driveway provide an accent for the area. Shrubs also are used to provide a haven to attract wildlife to the bird bath to the right of the house.

For more Smart Landscapes info and media, be sure to visit:

1. Mississippi Smart Landscapes website available at

<http://extension.msstate.edu/smartlandscapes>

2. Our Facebook page at

<https://www.facebook.com/smartlandscapesmsu/>



Mississippi Smart Landscapes media

Contact the MSU-ES Smart Landscapes Team:



Dr. Eddie Smith

Extension Agent III

Email: eddie.smith@msstate.edu
MSU Extension- Pearl River County



Patricia Drackett

Asst Prof & Director,
Crosby Arboretum
Email: pat.drackett@msstate.edu
Crosby Arboretum, Picayune, MS



Bob Brzuszek

Professor
Email: rfb7@msstate.edu
Landscape Architecture



Smart Landscapes, MSU Extension Service