

Azaleas

In Alabama, the stars of showy spring flowers are dogwoods and azaleas. The two plants look good together, but it is the azalea that brings the most variety and color in its beautiful flowers. Azaleas may be the most popular flowering shrubs in Alabama.

Azaleas originated in Asia, where they were cultivated in different areas by Buddhist monks. From 1790 to 1853 many ships from Europe found their way to Japan, and azaleas thus found their way to Europe. At first, these "Indian azaleas" were popular greenhouse plants in Belgium, England, France, and Germany.

From England, the first hybrid Indian azaleas were distributed to Boston, New York, and Philadelphia. The first southern hybrid azaleas were planted in Charleston, South Carolina in 1848. Today, azaleas can be found in each climatic region in the Eastern half of the United States and also in most of the Pacific Coast region.

The early botanist Linnaeus distinguished azaleas from rhododendrons by the five stamens that most azalea flowers have, while rhododendron flowers have ten. Carl Maximowicz corrected this mistake in 1870, but, as far as most gardeners are concerned, Linnaeus was right. Actually, all azaleas are rhododendrons. In recent years, however, rhododendron has been used to refer to the plants with large, leathery, evergreen leaves. Azalea refers to those with smaller, thinner leaves. Some azalea varieties are deciduous, which means they lose their leaves in the winter. Others are green year-round.

SELECTING VARIETIES

Hundreds of azalea varieties can be grown in Alabama. Unfortunately, many gardeners try to grow varieties that are not suited to their area and are disappointed with their results. Variety selection is very important in any section of the state.

Cold hardiness is a major factor in selecting varieties. Azaleas are very different in the capacity of both plants and flowers to withstand cold injury.

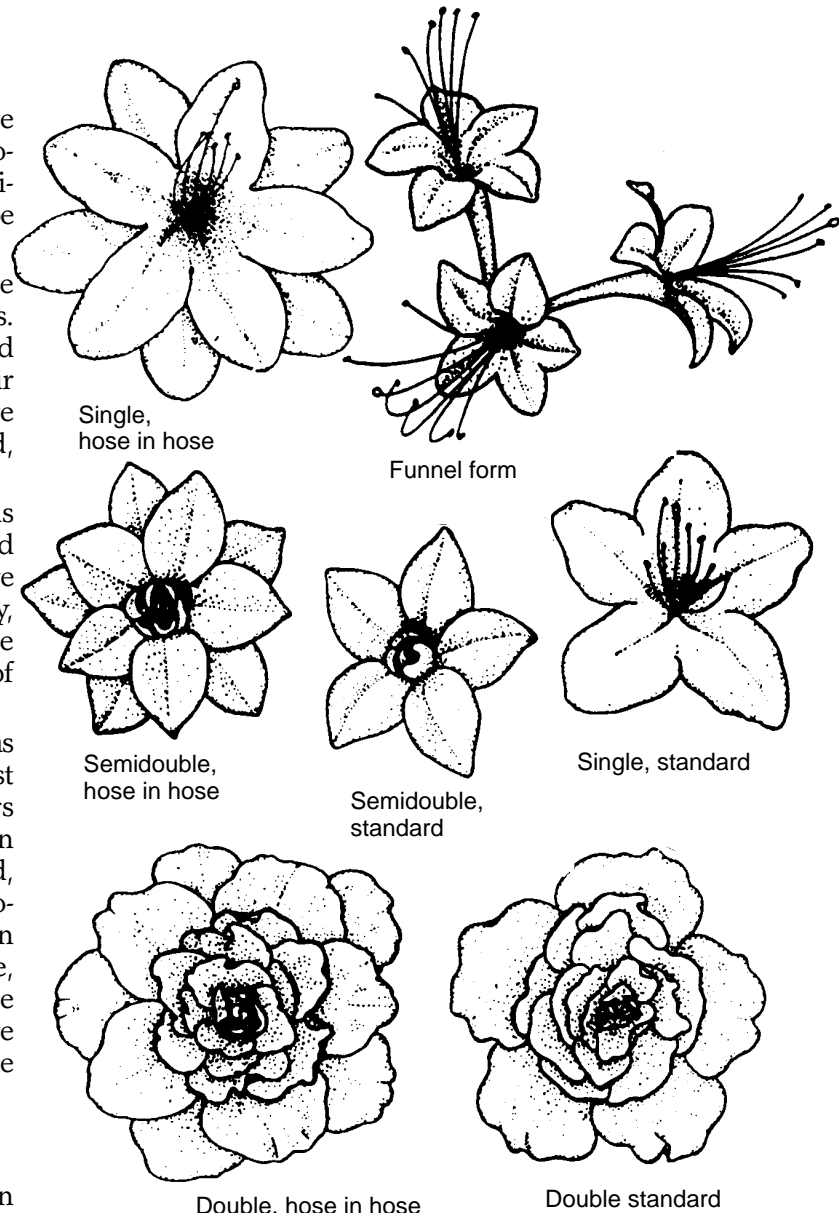


Figure 1. Basic flower forms.

Azalea flower forms are classified as standard or hose-in-hose, and single, semi-double, or double. Flower differences occur between many cultivars, and flowers can differ within a cultivar. The basic flower forms are illustrated in Figure 1.

To avoid confusion in classifying azalea varieties, the more common groups that grow well in the state are described below.

Kurume Hybrids

The first Kurume azaleas were brought to the United States from Japan around 1915, causing a wave of popularity of the evergreen azaleas. The Kurume azaleas are called "dwarf" by many Alabama gardeners. This is not completely correct, though, because many varieties grow 4 to 6 feet tall. However, they grow slower and have smaller leaves and flowers than the Southern Indian azaleas.

Most Kurume azaleas are cold hardy and can be grown anywhere in Alabama. You can choose from many colors, including lavender, pink, orange, red, and white. Some varieties produce hose-in-hose blossoms, which have one blossom inside another and give the appearance of double flowers.

Hinode Giri blooms profusely about midseason. It is a low, rounded, compact plant with red flowers.

Snow is a very popular variety that produces many white hose-in-hose flowers. The plant is compact and blooms about midseason.

Coral Bells blooms early and profusely. It has pink hose-in-hose flowers.

Bridesmaid has big, salmon-pink flowers. It blooms in midseason. This variety is a vigorous grower.

Christmas Cheer has small, dark green leaves and red hose-in-hose flowers. It blooms in midseason.

Flame grows fast and blooms early. The plant is upright and the flowers are orange-red.

Pink Pearl flowers grow in large clusters. They are hose-in-hose and salmon colored. This variety blooms early and is a prolific bloomer.

Salmon Beauty produces salmon-pink, hose-in-hose flowers with frilled petals. It blooms in midseason.

Other popular Kurume varieties include **Apple-blossom** (light pink), **Mauve Beauty** (hose-in-hose mauve), **Peach Blossom** (pale salmon-pink), **Vesuvius** (salmon-red), and **Sherwood Red** (orange-red).

Southern Indian Hybrids

Commonly referred to as Indica azaleas, Southern Indian hybrids are noted for their large flowers and leaves and fast rate of growth. They grow well in South Alabama, where they sometimes reach a height of more than 8 feet. In the northern half of Alabama, the flower buds of Indica azaleas are injured more than the other popular hy-

brids, such as Kurume, Glenn Dale, and Gable. In the mountain areas they are often killed or severely injured, especially when there is a freeze before the plants are completely dormant in late fall.

Formosa is a very popular variety with large, rose-purple flowers. It has a spreading growth and blooms early.

Duc de Rohan blooms early. It is a low, compact plant with orange-red flowers.

Fielders White has large, white flowers with frilled edges. It is a compact plant.

George Lindley Taber has light pink flowers in late and midseason.

Judge Solomon has pink flowers. It is a sport (bud variation) of Formosa.

Mrs. G. G. Gerbing grows fast and produces white flowers in midseason. It is a sport of George Lindley Taber.

President Clay has orange-red flowers. It is a vigorous grower and blooms in midseason.

Southern Charm has large, pink flowers that may fade in full sun. It blooms in early to midseason.

Elegans blooms early with light pink flowers. It grows upright.

New White is very similar to Fielders White but has smaller flowers.

Pride of Mobile has large, deep rose-pink flowers that bloom in midseason. It is slightly less vigorous than Formosa.

Belgian Indian Hybrids

Belgian hybrids were developed mainly for greenhouse forcing. Their flowers are single, double, or semi-double with frilled petals. There are many colors. They are grown along the coast and in the lower South Alabama counties, but both plants and flowers are usually injured by low temperatures.

Some varieties include **Albert-Elizabeth** (double white with orange-red edge), **Hexe de Saffelaere** (hose-in-hose red), **Paul Schaeme** (double light orange), **Triumph** (double frilled red), **Madame Petrick** (double brilliant pink).

Rutherford Hybrids

Similar to the Belgian Indian hybrids, Rutherford hybrids have striking flowers. Unfortunately, they are also tender and are used mainly for greenhouse forcing. Examples include **Alaska** (white) and **Dorothy Gish** (frilled orange-red).

Dwarf Indica Azalea

Many authorities believe the dwarf Indica is separate from the Indica azaleas. The best known dwarf Indicas in this country are the **Gumpo** group,

which are excellent landscape plants. They are compact, low growing plants that produce an abundance of small leaves. Large, ruffled flowers bloom in June. The **Gumpo** variety produces single, white, ruffled flowers up to 3-inches wide. **Pink Gumpo** produces pale pink flowers with a white edge. **Gumpo**s are a good choice if you want a true dwarf azalea.

Satsuki And Related Hybrids

Although most Satsuki varieties are not well known in the United States, they are very popular in Japan where they originated. Authorities believe they came from the Japanese species *indicum* and *ericarpum*. Some varieties grow as tall as 5 feet.

Most Satsuki azaleas bloom from mid-May through mid-June in Alabama. Many produce very large, flat flowers, 4- to 5-inches wide. Colors may vary widely, even on individual plants.

Alabama nurseries are beginning to stock **Amagasa** (red), **Bunka** (pink), **Gunbi** (white frilled with red flecks or stripes), **Gunrei** (pink with rose variegation), **Higasa** (very large, deep rose-pink), **Shinnyo No Tsuki** (large, white centers with rose edges), and **Eiten** (mallow purple).

When the Satsuki azaleas become better known, they will probably be used more by Alabama gardeners. They extend the azalea season and offer blooms past the time of our last frost dates.

Gable Hybrids

Many Gable hybrids were developed by crossing the Korean (*Rhododendrum poukhanense* and *R. kaempferi*) azaleas. They are very hardy evergreens, but the winter foliage is usually unattractive. Flower colors include pink, orange, red, purple, and white. Most are singles, but some are semi-double and double. Some are hose-in-hose.

The Gable hybrids are widely used in the Northeast and Midwest, primarily because of their cold hardiness. If you live in one of the colder parts of Alabama, you might seriously consider them when buying plants.

Popular varieties include **Rose Greely** (hose-in-hose white), **Mary Dalton** (orange-red), **Stewartstonian** (red), **Carol** (hose-in-hose violet-red), **Big Joe** (red-violet), **Herbert** (purple), **Forest Fire** (hose-in-hose red), **Purple Splendor** (purple), **Rosebud** (double rose), **Cameo** (hose-in-hose shell pink), and **Corsage** (lavender).

Kaempferi Hybrids

The Kaempferi hybrids are hardier than the Kurumes; however, the winter foliage is usually not as attractive. The plants usually grow upright and may reach 9 feet tall.

Popular varieties include **Fedora** (violet-red), **Gretchen** (red-violet), **Kathleen** (rosy red), **Carmen** (red), **Norma** (violet-red), **Othello** (red), **Alice** (salmon-red), **Juliana** (deep pink), **Mary** (violet-red), and **Oberon** (soft pink).

Glenn Dale Hybrids

An extensive breeding program by the USDA at Glenn Dale, Maryland, gave us the Glenn Dale hybrids. There are more than 450 named varieties, and nurseries are producing more as gardeners learn about and request new varieties in this group. It is difficult to describe the Glenn Dales as a group because many parent plants were used to develop them. Many varieties have the vigorous growth characteristic and large flower size of the Southern Indian azalea, plus much greater cold hardiness.

One reason for developing this group was to have more varieties that bloom in mid- and late season. Some varieties bloom early with the Kurumes, and many are midseason bloomers, reaching a peak in late April or early May in central Alabama. Some of the excellent late-flowering varieties do not bloom until early June in the Birmingham area.

It is hard to choose a few Glenn Dales as most outstanding because of the hundreds available. However, some of you may be interested in the ones listed below, grouped by approximate blooming time. Many people enjoy having a succession of blooming azaleas throughout the season rather than one big explosion of color.

Early Season Bloomers

Dayspring (pink), **Festive** (white striped with red), **Gladiator** (orange-red), **Morning Star** (deep rose), **Refrain** (hose-in-hose light pink), and **Wildfire** (red).

Midseason Bloomers

Aphrodite (pale rose-pink), **Beacon** (scarlet), **Boldface** (white center with lavender edges), **Buccaneer** (orange-red), **Colleen** (pink), **Delilah** (begonia rose), **Fanfare** (hose-in-hose pink), **Glacier** (white), **Joya** (rose-pink), **Mary Margaret** (orange-red), **Suwanee** (rose-pink), **Treasure** (white), **Vespers** (white with chartreuse throat), **Violetta** (light mallow purple), **Ursula** (LaFrance pink), **Arctic** (white), **Alight** (orange-pink), **Copperman** (orange-red), **Delos** (rose-pink), **Evensong** (rose-pink),

Fashion (hose-in-hose begonia rose), **Fawn** (white center with pink edges), **Grace Freeman** (pale pink), **Greeting** (coral-rose), **Jessica** (rose-pink), **Martha Hitchcock** (white with magenta edges), **Masquerade** (white with pink stripes), **Pinocchio** (white with red stripes), **Radiance** (deep rose-pink), **Seashell** (deep rose-pink), **Swashbuckler** (red), and **Vestal** (white).

Late Season Bloomers

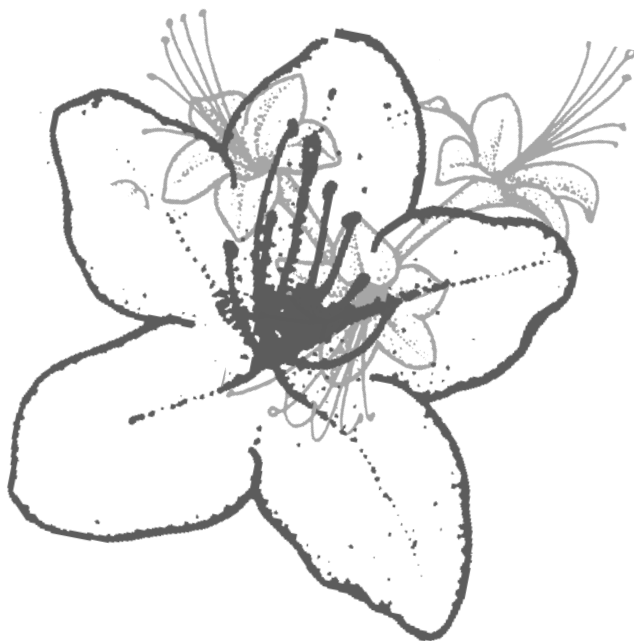
Aztec (peach-red), **Eros** (pink), **Louise Dowdle** (Tyrian pink), **Sagittarius** (geranium pink), and **Sterling** (deep rose-pink).

Pericat Hybrids

Developed to be a greenhouse forcing group, the Pericat hybrids may have resulted from crossing Belgian Indian hybrids and Kurume hybrids. The flowers are exceptionally striking with many semi-double and hose-in-hose forms and frilled petals. Some are as cold hardy as the Kurumes; others are less hardy and can be safely used only as far north as the Montgomery area.

Varieties include **Flander's Field** (red), **Fortune** (red), **Splendor** (phlox pink), **Dawn** (phlox pink), **Sensation** (violet-red), **Sweetheart Supreme** (hose-in-hose pink), **Hiawatha** (hose-in-hose red), **Hampton Beauty** (rose-pink), **China Seas** (pink), **Pink Pericat** (pink), and **Pinocchio** (double rose).

Popularity is not necessarily the best method for selecting plants, but the following list offers you one indication of the cultivars others are enjoying. (Taken from a survey conducted by Jim Darden, *NCAN Nursery Notes* 24 (2): 48-55).



Mid-Atlantic Region (Hardiness Zone Similar To Central And North Alabama)

Most Popular Red:

1. Hino Crimson
2. Hershey's Red
3. Hinode Giri
4. Girard's Scarlet
5. Mother's Day
6. Christmas Cheer
7. Girard's Crimson
8. Hexe

Most Popular Pink:

1. Coral Bells
2. Girard's Rose
3. Tradition
4. Nancy of Robinhill
5. Wakaebisu
6. Lady Robin
7. Pink Gumpo
8. Blaauw's Pink

Most Popular Orange-Red:

1. Stewartstonian
2. Girard's Hot Shot
3. Fashion
4. Scout
5. Tropic Sun
6. Hershey's Orange
7. Sherwood Red
8. Garden State Glow
9. Macrantha Orange

Most Popular Lavender-Purple:

1. Herbert
2. Purple Splendor
3. Corsage
4. George Lindley Taber
5. Girard's Fuchsia
6. Merlin
7. Dauntless
8. Royalty
9. Mildred Mae
10. Karen

Most Popular Variegated:

1. Conversation Piece
2. Janet Rhea
3. Orange Flair
4. Silver Sword
5. Geisha
6. Issho No Haru
7. Whitehead
8. Martha Hitchcock

Overall Best Selling:

1. Hino Crimson
2. Hershey's Red
3. Delaware Valley White

4. Fashion
5. Pink Gumpo
6. Coral Bells
7. Tradition
8. Glacier
9. Greeting
10. Girard's Fuchsia
11. Mother's Day
12. Karen

North Carolina Garden Centers (Central And North Alabama Hardiness Zones)

Most Popular Red:

1. Hershey's Red
2. Hino Crimson
3. Redwing
4. Sunglow
5. Hinode Giri
6. Christmas Cheer
7. Wolfpack Red
8. Hexe
9. Massasoit

Most Popular Pink:

1. Coral Bells
2. Pink Ruffles
3. Pink Gumpo
4. Tradition
5. Chinsoy
6. Evensong
7. Wakaebisu
8. Greeting
9. Mary Lynn
10. Macrantha Pink
11. Blaauws Pink
12. Pink Cloud
13. Renee Michelle

Most Popular White:

1. Delaware Valley White
2. Snow
3. Mrs. G. G. Gerbing
4. H. H. Hume
5. Treasure
6. Girard's Kathy
7. Pleasant White

Most Popular Orange-Red:

1. Sherwood Red
2. Fashion
3. Stewartstonian
4. Hershey's Orange
5. Trouper
6. Buccaneer
7. Amagasa
8. Macrantha Orange

Most Popular Lavender-Purple:

1. Formosa

2. George Lindley Taber
3. Karen
4. Mildred Mae
5. Purple Splendor
6. Herbert

Most Popular Variegated:

1. Martha Hitchcock
2. Conversation Piece
3. Ben Morrison
4. Johga
5. Marian Lee
6. Aikoku

Overall Best Selling:

1. Coral Bells
2. Hershey's Red
3. Snow
4. Hino Crimson
5. Delaware Valley White
6. Sunglow
7. Pink Gumpo
8. Aikoku
9. Hinode Giri
10. Wakaebisu

North Carolina Wholesale Growers

Most Popular Red:

1. Hino Crimson
2. Hershey's Red
3. Sunglow
4. Hinode Giri
5. Christmas Cheer
6. Wolfpack Red
7. Redwing
8. Hexe
9. President Clay
10. Girard's Crimson
11. Red Ruffles

Most Popular Pink:

1. Coral Bells
2. Pink Gumpo
3. Pink Pearl
4. Pink Ruffles
5. Higasa
6. Rosebud
7. Laura
8. Boudoir
9. Chinsoy
10. Salmon Bells
11. Pink Cloud
12. Shinkigem
13. Tradition
14. Dawn
15. Girard's Rose
16. Greeting
17. Wakaebisu
18. Girard's Scarlet
19. Pride of Summerville

Most Popular White:

1. Delaware Valley White
2. Snow
3. H. H. Hume
4. Glacier
5. Mrs. G. G. Gerbing
6. Kathy

Most Popular Orange-Red:

1. Sherwood Red
2. Amagasa
3. Buccaneer
4. Flame
5. Fashion
6. Macrantha Orange
7. Girard's Hot Shot

Most Popular Lavender-Purple:

1. Formosa
2. George Lindley Taber
3. Purple Splendor
4. Cochran's Lavender
5. Mildred Mae
6. Herbert
7. Apple Blossom
8. Merlin

Most Popular Variegated:

1. Martha Hitchcock
2. Festive
3. Conversation Piece
4. Ben Morrison
5. Shinkigem
6. Fascination
7. Keisetsu
8. Frosted Orange

Overall Best Selling:

1. Delaware Valley White
2. Snow
3. Coral Bells
4. Hershey's Red
5. Hino Crimson
6. Hinode Giri
7. Glacier
8. George Lindley Taber
9. Sunglow
10. Christmas Cheer
11. Formosa
12. Pink Gumpo
13. H. H. Hume
14. Mrs. G. G. Gerbing
15. Higasa
16. Wolfpack Red
17. Pink Ruffles
18. Redwing
19. Shinkigem
21. Mother's Day
22. Amagasa

Deep South (Potential South Alabama Favorites)

Most Popular Red:

1. Hino Crimson
2. Hinode Giri
3. Christmas Cheer
4. President Clay
5. Hershey's Red
6. Massasoit
7. Red Ruffles
8. Redwing
9. Mother's Day

Most Popular Pink:

1. Coral Bells
2. Pink Gumpo
3. Wakaebisu
4. Pink Ruffles
5. Pride of Mobile
6. Pride of Summerville
7. Rosebud
8. Southern Charm
9. Hampton Beauty
10. Laura
11. Sherwood Cerise
12. Judge Solomon
13. Princess Augusta
14. Willie Belle Mayo

Most Popular White:

1. Snow
2. Mrs. G. G. Gerbing
3. H. H. Hume
4. Delaware Valley White
5. Fielders White
6. Glacier

Native Azaleas

Native azaleas, often called bush honeysuckle, are as beautiful as many varieties brought into the state. Many have unusual yellow to orange and orange-red flowers, such as the Florida azalea. Most of them are either native to Alabama or will grow well in most areas of the state. Native azaleas lose their leaves in winter. The individual florets are trumpet shaped and usually borne in large terminal clusters. Identification of native azaleas is difficult because of the similarities between species. Natural hybridization has complicated the matter by producing many intermediate forms with unusual flower colors. You may need to ask for these varieties by their scientific names to be sure you get the right plant.

Florida azalea (*Rhododendron austrinum*) produces fragrant yellow flowers in late March and early April. They are native to north and west Florida, southwest Georgia, south Alabama, and southeast Mississippi. They grow to more than 12 feet tall.

Most Popular Orange-Red:

1. Fashion
2. Sherwood Red
3. Hershey's Orange
4. Price of Summerville
5. Macrantha Orange
6. Trouper
7. Stewartstonian

Most Popular Lavender-Purple:

1. Formosa
2. George Lindley Taber
3. Mildred Mae
4. Herbert

Most Popular Variegated:

1. Iveryana
2. Gyokuskin
3. Conversation Piece
4. Gwenda
5. Festive
6. Myogi

Overall Best Selling:

1. Coral Bells
2. Snow
3. Formosa
4. George Lindley Taber
5. Mrs. G. G. Gerbing
6. Hershey's Red
7. Pink Gumpo
8. Hinode Giri
9. Sherwood Red
10. Red Ruffles

Piedmont (*R. canescens*) flowers are white to light pink. They bloom in late March and early April. They may be found growing wild in north Florida to North Carolina and in Texas. They sometimes reach 15 feet tall.

Oconee (*R. speciosum*) usually flowers later than the Piedmont azalea. Its natural habitat is in western Georgia to South Carolina. The plants have orange to red-orange flowers. Some are low shrubs while others grow to 6 feet tall.

Pinxterbloom (*R. nudiflorum*) produces white, pale pink to violet-red flowers in early to mid-April. They are native to North Carolina and Tennessee. The plants are usually dwarf.

Pinkshell (*R. vaseyi*) has rose-pink flowers with green throats and orange-red dots. The tall plant blooms in mid-April. It is found mainly in the mountains of western North Carolina.

Alabama (*R. alabamense*) has white flowers with yellow blotches and grows 3 to 6 feet tall. It blooms in mid- to late April. It may be found growing wild in north-central Alabama and isolated areas of west central Georgia.

Coastal (*R. atlanticum*) flowers are white flushed with red. It is native to the Carolinas. The plants are low and very hardy.

Swamp (*R. viscosum*) flowers are white. They bloom from mid-May to early June. They are native to Alabama, Georgia, and areas northward. They are usually low growing.

Flame (*R. calendulaceum*) plants are tall. Their flowers are orange to yellow and bloom in late May and early June. They may be found wild in northern Georgia and areas northward.

Sweet (*R. arborescens*) is the best of the white natives. They bloom in late May and early June and are native to Alabama, Georgia, and areas northward. One form, the Georgiana azalea, flowers in July and sometimes in August.

Texas (*R. oblongifolium*) has white flowers. It is much like the Swamp azalea but is native to southwestern Arkansas, east Texas, and Oklahoma.

Cumberland (*R. bakeri*) flowers are yellow and red. They grow 2 to 5 feet tall and bloom in late June and early July. They are native to high elevations in Kentucky, Tennessee, north Georgia, and north Alabama.

Hammocksweet (*R. serrulatum*) has white flowers that bloom in late July to early August. The plants grow very tall. They are native to Georgia down to central Florida and also to Louisiana.

Plumleaf or Prunifolia (*R. prunifolium*) blooms from early July to early September. The flowers are orange to deep red and the plants grow to 20 feet

tall. They grow wild in southwestern Georgia and eastern Alabama.

Many other natural hybrids occur in different colors and heights.

BUYING PLANTS

You will get the most effective display of flowers by planting a mass of a single variety instead of using many varieties and colors together.

Buy plants that are sturdy with a good branch system. Don't buy plants with weak, spindling growth. This usually means the plant has a poor root system or that plants were grown too closely spaced in the nursery. The best size to buy is 12 to 16 inches tall. Smaller plants are more likely to be injured by cold.

Azaleas are usually bought as container-grown plants. They are sometimes pot-bound, which means they have a mass of roots growing around the outside of the ball of soil. Take the plant out of the container before you buy it. Make sure that the roots are healthy and that they completely fill the pot. If you notice plants are pot-bound when you take the plant out of the container, massage the root ball to loosen some of the roots before planting. Also, pull some of the roots at the bottom of the root ball. Such action will help the roots to spread out and grow away from the original ball of container potting medium.

WHERE TO PLANT

Carefully consider your planting sites. Pick a place with light to moderate shade. Azaleas that receive some shade during the winter usually suffer much less cold damage. And, during hot weather, the flowers last much longer on plants in filtered shade than on those in full sun. The varieties that bloom late need to be in partial shade to prevent sunscald to the flowers.

Pine trees with moderate filtered shade give ideal protection for azaleas. However, very heavy shade throughout the day may reduce flower production and result in weak growth. Evergreen trees or tall shrubs with low branches make good windbreaks and attractive backgrounds for an azalea planting. Shallow-rooted trees, such as oaks, elms, and maples, may compete with azaleas for moisture and nutrients.

Soil conditions should be considered in selecting a planting site. Azaleas require an acid soil pH to grow properly. Check the soil pH of your site before you buy azaleas. If the pH is above 6.5 you can expect to spend additional money and effort to maintain a pH in the proper range for plant growth. It may be to your advantage to consider other kinds of landscape plants for that site. However, artificial

raised beds can be created by adding pine bark or peat moss to improve drainage and lower pH. These beds should be 10 to 12 inches deep. This depth provides an artificial environment similar to a large container. Additional watering is required. Building raised beds over existing tree roots can be stressful and potentially damaging to the trees.

A pH of 5.5 is good for most varieties of azaleas. The reason azaleas do better in slightly acid soil is because iron is more available. Iron in the soil may become unavailable to the plants if the pH gets too high.

Iron chlorosis is caused by not enough iron getting to the plant. The symptom of iron chlorosis is that the area between the veins is yellow or light green while the veins are darker green. In some cases there simply may not be enough iron in the soil. However, in most Alabama situations the trouble usually is the fact that the iron in the soil cannot be taken up by the plant. This situation is often caused by a too-high pH level. Other causes of chlorosis may be poorly aerated soil, a heavy application of fertilizer, or roots that are heavily infested with nematodes or infected with root-rot disease organisms.

Chelated iron is an effective way to temporarily correct iron deficiency symptoms. Use it at the rate recommended on the container.

WHEN TO PLANT

Azaleas can be planted any time of the year if proper attention is given to providing adequate water.

Most people buy azaleas in the spring when the plants are blooming so they can choose the right color combinations. Autumn is probably a better time to plant, however, because the plants can then become better established before hot weather.

Native azaleas gathered from the woods are more difficult to transplant than the introduced varieties. Dig them only in the winter when they are dormant and then cut the top of the plants back to about 6 inches above the ground. Cutting them back will give the plants a much better chance to survive. The root system can become well established and then they will produce more vigorous growth. Of course, plant collecting from the wild should only be done from approved areas and not from our state or national parks.

PREPARING THE SOIL

Preparing soil properly is the basis for successful azalea culture. Beginners do not always realize how important soil preparation is, and the azaleas they plant often grow poorly. The only way to know

what nutrients your soil needs for growing azaleas and whether the soil pH level needs correcting is to have a soil test. Get information and supplies for soil testing at your county Extension office.

For good results, spend about the same amount of money for organic material as you spend for azalea plants. Organic matter does several important things for the root growth of azaleas. It loosens and aerates tight clay soils; and, loose sandy soils can usually hold more water for a longer period of time with the introduction of organic matter.

There are several good organic materials. Peat moss is ideal for azaleas and is probably the best to use. Ground pine bark is also very good. Leaf mold from the woods and composted leaves are satisfactory.

Sawdust is used by a number of Alabama nurserymen. However, using sawdust may rob the soil of its nitrogen supply during the first and second growing seasons. If this happens, the leaves will turn a light yellow. This discoloration can be corrected by light applications of nitrogen during the growing season, in addition to regular fertilization.

Peat moss is best to use, followed by pine bark, leaf mold, and then sawdust.

PLANTING

Before planting, space plants out based on their ultimate mature size. A common mistake is to plant azaleas too close together. The result is plants that lose their character, are harder to maintain, and are more prone to insect and disease problems.

Water azalea plants in the container to increase plant water content before planting.

If you are planting a bed of azaleas, put 5 to 6 inches of organic matter on the surface. Then work it in to a depth of 12 inches.

If azaleas are to be planted in individual holes rather than beds, dig each hole shallow and wide, at least 24 inches wide or 2 to 3 times the width of the container. The hole should be a depth that will allow the top of the root ball to stick up about ½ inch above the surface of the surrounding soil. Use only the native soil to fill the hole.

Deep planting often causes stunted growth or it may even cause the plant to die. Set the plant in the hole and add soil, lightly firming it around the root system. When the hole has been filled, water it thoroughly to further settle the soil. The goal is to remove air pockets around the roots and not to "pack" the soil. Structure and valuable air space are often lost in packing, and the plant suffers. On a slope or in a well-drained soil, make a saucer-shaped depression around the plant to hold water.

MULCHING

Mulching is very important in azalea culture because it keeps the soil from drying out too fast. Pine straw is excellent mulch and is usually easy to get. Ground pine bark is also good. Slightly rotted tree leaves can be used.

Avoid using black plastic to mulch azaleas, but landscape fabrics are acceptable as those materials allow better air penetration into the soil than black plastic.

Spread the mulch out beyond the outer leaves of the plants. After settling, mulch should be 2 to 3 inches deep.

WATERING

Azaleas must be watered during dry periods and after initial planting. September and October are especially important times to supply water. You won't need to water as often if you have planted properly, because correct planting promotes good root development. A good mulch also helps to reduce the amount of water you will need to use as well as the number of times you have to water. If a mulch is used, a heavy watering once a week should be enough during dry periods. Two to three times a week for the first 6 to 8 weeks after planting would be beneficial.

FERTILIZATION

A big problem in azalea culture is over-fertilizing, especially with phosphorus. Too much fertilizer injures the plants and may even cause them to die. Be particularly careful with small plants. Use no more than 1 teaspoon of fertilizer at a time on plants less than 12 inches tall. For larger plants, use 1 heaping tablespoon per foot of height. Scatter the fertilizer under the plant on top of the mulch. It is better to make a light application after blooming and another in July than to apply the yearly recommendation all at one time.

The best way to avoid over-fertilizing your azaleas is to have your soil tested every 2 or 3 years and follow the recommendations. If you don't have a soil test, use an all-purpose fertilizer, such as 8-8-8 or 12-6-6, on soils with medium or low fertility. Some special azalea-camellia formulations cater to the acid soil requirements of these plants with part of the plant nutrients in a slow-release form. In many cases, these are very good for azaleas. Many nurserymen have gotten excellent results with fertilizers containing two parts nitrogen to one part phosphorus and one part potassium, especially when part of the nitrogen is in slow-release form.

If your soil fertility is high, you only need to use nitrogen.

PRUNING

Azaleas can be pruned without damaging the plant and without interfering with future flower production. Nurserymen begin pruning when the plants are small to create a compact, branching growth habit.

In Alabama many azaleas begin to set flower buds in July. Therefore, pruning after early July may reduce the next year's flower production. The best time to prune is soon after the flowering period in the spring. Cut out the limbs that have grown out of the main body of the plant. Do not shear unless your intention is to create a formal hedge, spalier, or topiary plant. Shearing destroys the natural form of the plant.

Azaleas often become too large for the area they occupy, especially when they are used as foundation plants around a home. If this happens, cut back the large plants to 6 to 12 inches above the ground shortly after blooming. When new growth buds appear on the stem, the new stems and leaves will grow very fast. Pinch out any long unbranched shoots that develop to force a branch system. Be sure to keep the soil moist for several days after severe pruning.

INSECTS

The following list gives a description of several of the most damaging insects that attack azaleas.

Pesticides are under constant review by the Environmental Protection Agency (EPA), so use only those that bear the EPA registration number and carry directions for home and garden use. County Extension agents and garden center operators have up-to-date information on pesticides for home use.

Peony scales infest the twigs, branches, and stems of plants. They are circular or oval with a tough covering. A waxy covering forms over their bodies; then, flakes of the tree bark seem to grow over the outer edges of the insects so that they become somewhat depressed in the bark pits.

Azalea bark scales are white, oval-shaped insects that are covered with fine threads of a wax-like secretion. Unlike most covered scales, they can move from one plant to another. They are usually found in the axils of branches and stems. These scales give off large amounts of a sweet, sticky substance called honeydew. A sooty mold fungus grows on the honeydew. This causes the branches and stems of heavily infested plants to look black and unattractive.

Spider mites are serious pests of many ornamentals, including roses, boxwoods, azaleas, carnations, hollies, pyracanthas, junipers, and several shade trees. Adult spider mites are oval and have

eight legs. They vary in size and may be green, orange, red, brown, black, or a combination of these. As red is one of the most common, they are often called red spiders. Young mites (nymphs) resemble adults except they are smaller and have only six legs.

Spider mites puncture the tissues of leaves and flowers with needle-like mouthparts and suck juices from the plant. This destroys the chlorophyll around the puncture, giving the leaves and flowers a speckled appearance. As mites multiply, entire leaves become discolored and distorted, and they may drop off. These pests are very small and feed mainly on the underside of leaves. They often go unnoticed until plant damage is obvious.

Azalea lace bugs are small insects with black bodies and colored or variegated, lace-like wings. They feed on the underside of leaves. The upper leaf surface opposite the feeding areas becomes speckled, and the leaf looks light or bleached and eventually turns brown. Lace bugs give off large amounts of a dark, sticky substance on the underside of leaves. The substance may drop from the plants. Black globules on the lower surface of the leaves is an obvious symptom of this insect.

Azalea whiteflies are tiny, moth-like insects about $\frac{1}{16}$ inch long and are covered with a snow-white, waxy powder. The immature forms are flat and oval, light yellow to green, and resemble miniature scales. Both adults and nymphs have sucking mouthparts and feed on the underside of leaves. The leaves become covered with honeydew, which causes a black sooty mold fungus to grow.

Azalea caterpillars are colorful, hairy insects capable of completely defoliating azalea plants. The full-grown caterpillars have a red head and a black body with rows of yellow spots and white hairs. The partly grown larvae are red to brownish black with white to yellow stripes. Most damage occurs in August and September; apparently there is only one generation each year.

DISEASE CONTROL

Nematodes—microscopic eel-like worms—cause severe root damage. The root-knot nematode causes swollen knots or galls on the roots. Other kinds of nematodes feed on the outside of the roots and prevent normal root development. Affected plants grow slowly and quickly wilt in dry weather.

Damage from nematodes can usually be avoided by buying noninfested plants and planting them in sterilized soil. If nematodes are a problem around established plants, they can be treated.

Leaf gall is caused by the fungus, *Exobasidium azaliae*. Leaves or stems of the first flush of growth thicken and enlarge greatly if affected. Only a few

leaves or twigs will be affected on each plant. Remove and destroy diseased parts as soon as they are detected to prevent spore formation. Spraying with recommended fungicides when new growth begins in spring helps prevent leaf gall infection.

Lichens are green to gray-green mossy growths on the stems of old, neglected plants. The lichen itself does not actually damage the plant. The lichen is usually a sign that the plant needs to be fertilized, cultivated, mulched, or treated for nematodes.

Phytophthora root rot is the most damaging disease of many container- and field-grown woody ornamentals. Disease outbreaks may occur during favorable conditions at almost any time in the production cycle as well as in landscape plantings to this devastating disease. Complete losses of azalea and rhododendron crops to *Phytophthora* root rot have occasionally occurred. Serious losses have also been seen on a range of Kurume azalea and juniper cultivars.

Symptoms. *Phytophthora* root rot greatly reduces the volume of the roots, which are needed by the plant to absorb and transport water and nutrients. The roots on diseased plants are brittle and brown to reddish brown in color. A network of fine, discolored feeder roots may be confined to one area, or it may include the entire root system. The causal fungi usually colonize the crown of the plants, often girdling the stem at or just above the soil line. A brown to reddish-brown discoloration of the tissues occurs just below the bark and may extend up the stem above the soil line. On some trees and large shrubs, brown, water-soaked cankers oozing a dark-colored fluid or gum may develop at the soil line.

Symptoms vary according to the degree of root colonization by *Phytophthora* root rot fungi, plant age, root-rot susceptibility, and environmental stress. Typically, symptoms first appear on one plant and later on surrounding plants. Some yellowing of the foliage, particularly at the shoot tips, leaf shed, slowed plant growth, and possibly limb dieback may occur in early stages of the disease (Figure 2).

These symptoms can easily be confused with those of a nutritional disorder, overwatering, drought stress, and a number of other factors. Slight yellowing of the leaves followed quickly by permanent wilting and plant death are the symptoms usually associated with *Phytophthora* root rot on Kurume azaleas and rhododendrons in Alabama. In landscapes, established plants may show symptoms of general decline for one or more years before succumbing to root rot, while newly planted azaleas will quickly die.

The foliage of azaleas and rhododendrons may also be invaded by some *Phytophthora* root rot



Figure 2. Azalea with Phytophthora root rot.

fungi. Irregular blotches, which are first olive-colored and later brown, sometimes with a red margin, develop on the leaves. Diseased leaves are usually shed by the plant. Damage usually appears on limbs near the base of the plant.

Overwatering in the landscape will contribute to losses from disease. Phytophthora root rot is most commonly seen in landscape plantings on poorly drained, waterlogged soils. Disease development is usually slow or absent on well-drained sites.

Low soil pH (3.5 to 4.5) will suppress spore release, thereby reducing disease. However, Phytophthora activity is not slowed at soil pH's most conducive to plant growth. Overfertilization with nitrogen can greatly increase the disease. Soft, succulent tissues produced in response to excess nitrogen are readily colonized by root rot fungi.

Reaction Of Woody Ornamentals To Root Rot. Azaleas and rhododendrons vary in their susceptibility to Phytophthora root rot. Among hardy azalea

hybrid groups, the Indian, Glenn Dale, and Satsuki hybrids are more root-rot resistant than the more popular Kurume azaleas. In container nurseries, Kurume hybrids such as Hershey's Red, Sherwood Red, Snow, Coral Bells, and Hino Crimson have suffered heavy Phytophthora root rot losses, while nearby blocks of Indian and Satsuki (Gumpo) hybrids were largely untouched by the disease. The reaction of many popular hybrid azaleas to Phytophthora root rot is listed in Table 1.

COLD PROTECTION

Some azalea varieties can be injured by cold. They can usually stand very low temperatures in midwinter after they are dormant better than they can take a sudden early freeze in the fall or a late freeze in the spring. Bark splitting often occurs during these early and late freezes.

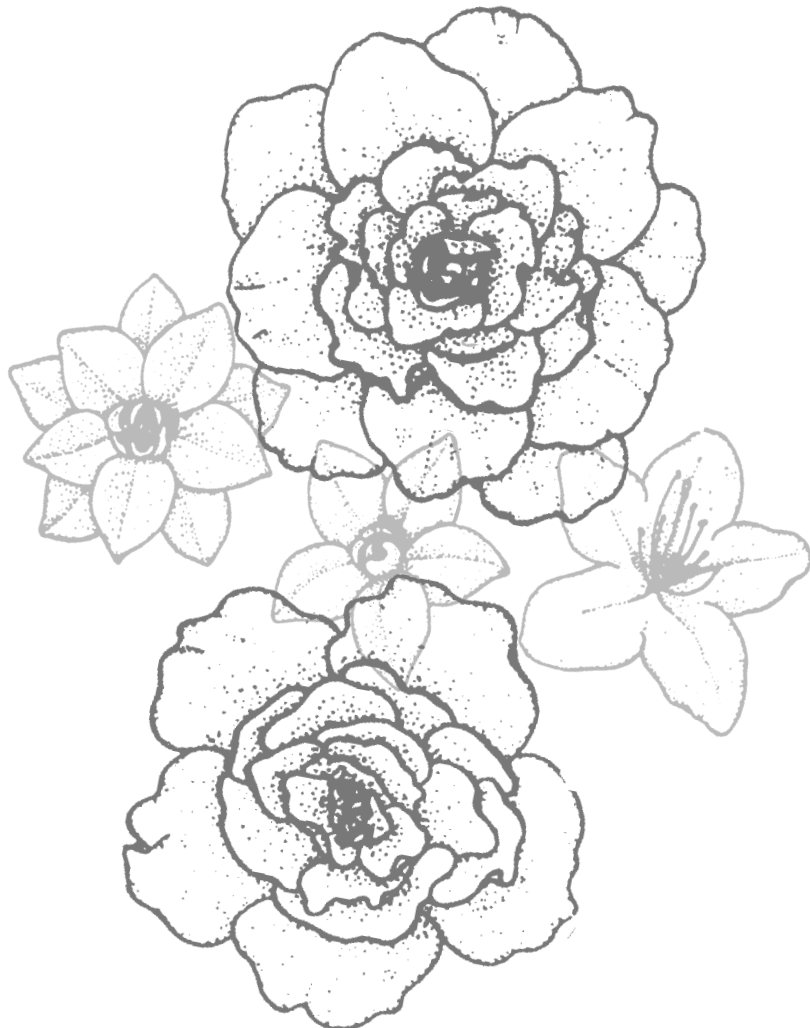


Table 1. Reaction Of Hybrid Azalea Cultivars To Phytophthora Root Rot.

Resistant	Moderately Resistant	Susceptible
Formosa	Barbara Gail	Robinhood
Fakir	Rentschler's Rose	Hershey's Red
Corinne Murrah	Dorothy Gish	Herbert
Merlin	Margaret Douglas	Fortune
Hampton Beauty	Gaiety	Catawba
Higasa	Gloria	Marian Lee
Glacier	Kingfisher	Snow
Rose Greeley	White Christmas	Royalty
Polar Sea	Sensation	Rosebud
Redwing	Prince of Orange	Mrs. G. G. Gerbing
Chimes	White Jade	Coral Bells
Alaska	Copperman	Treasure
New White	Hexe	Pat Kraft
Shinkigen	Massasoit	Saint James
Rachel Cunningham	Martha Hitchcock	Carror
Pink Gumpo	China Seas	Purple Splendor
Eikan	Warbler	Pinocchio
Sweetheart Supreme	California Sunset	General MacArthur
Pink Supreme	Amagasa	Pink Pearl
Morning Glow	Price of Summerville	Johga Sunglow
	Hinode Giri	Hino Crimson
	Flander's Field	Elaine Emily Pink Cloud Adelaide Pope Jane Spalding Sherwood Red Delaware Valley White

Some people believe a fall feeding with a fertilizer that does not contain nitrogen helps reduce cold injury to azaleas. Research has not found this to be true. In fact, little can be done just before an expected freeze to reduce the chance of cold injury. Selecting the right varieties for your area and planting them as recommended are more practical ways to reduce cold injury.

AZALEA PROPAGATION

Plant propagation is somewhat more difficult than planting a container-grown azalea. We have included a list of resource material at the end of this section that includes the sources of the information printed here.

You may root cuttings and grow plants many ways. Whatever method of propagation is used, sanitation and cleanliness is very important for success. The stock plants should be healthy, and the equipment used, the propagation preparation area, and the propagation area, greenhouse, or cold frame should be disinfected. Generally, most evergreen azaleas are easy to propagate. The problem is that not all species can be propagated using the same

method. Each of the several methods of propagation have advantages and disadvantages. Azaleas are propagated from seeds, stem cuttings, root cuttings, layers, and grafting. Stem cuttings are the most popular method.

Seed Propagation

Propagation by seed is a good method for many deciduous azaleas and other cultivars that are difficult to propagate by cuttings or other methods. Seed capsules are green and turn yellow to brown when mature. Capsules should be collected when they begin to turn brown, mid- to late autumn. If the capsule has split open, seeds will readily drop out. Store the seed capsules at room temperature in paper envelopes or open-top containers. Each capsule contains 100 to 500 seeds. The seeds can immediately be germinated or stored at 20°F in an airtight container for later use.

The sphagnum moss method is generally used for germination. Sphagnum should be shredded or milled, saturated with water, squeezed dry, and fluffed. The ideal container for germination would be a 3-inch deep, plastic container with a clear lid. Punch small drainage holes in the bottom. Rinse the container with a 10-percent chlorine bleach solution (1 cup bleach to 9 cups water) to sterilize the container. Fill the container to within 1 inch of the top with sphagnum. Scatter seeds over the moss and mist them lightly with water. Covering the seeds is not necessary. Close the containers and place them in indirect or fluorescent light. Keep the temperature between 60° and 75°F. Germination should begin within 2 to 4 weeks. Seedlings can be transplanted into individual containers or flats within 8 to 10 weeks.

Propagation By Stem Cuttings

Propagation by cutting is used most frequently for evergreen azaleas. Cuttings should be made from new wood (June and July) of healthy, mature plants. Suitable new wood should snap when broken. Cuttings should be 3 to 6 inches long with the leaves removed from the lower one-third to one-half of the cutting. Insert the cuttings 1 to 1½ inches deep in the rooting medium. Rooting medium varies from (a) equal parts of perlite and peat; (b) 1 part peat and 2 parts perlite; to (c) bark, peat, and perlite. Before sticking the cuttings, the rooting medium should be thoroughly moist (not wet) and firm.

Flats or individual pots may be used, depending on preference or the quantity of cuttings. Azalea cuttings can be rooted outside in a shady area if humidity is high, in a greenhouse under a mist system, or under enclosed plastic structures in shady areas. Rooting will normally occur in 4 to 6 weeks.

The problem in rooting all cuttings is trying to get roots initiated before the cuttings dry out. You prevent drying by increasing humidity, increasing shade, reducing air movement, and maintaining 100 percent humidity. Rooting hormones such as Hormex, Hormodim, Dip & Grow, and others also help in increasing the number of roots on the cutting.

Propagation By Layers

Layering is a modification of propagation by stem cuttings. It is a slow process, but it can be useful if the number of plants to be propagated is small. Branch layering is the easiest method of layering. A low, sweeping branch is selected and bent to the ground. A wound is made on the stem by making an upward cut 1 to 1/2 inches in length along the underside of the branch. The branch is buried 3 to 4 inches deep at the cut. The top of the branch is bent upward. The buried part of the branch should be pegged down with wire or a rock and covered with mulch. It frequently takes more than a year before the new plant can survive on its own roots. However, for the home gardener, this is often the easiest method to get a few extra plants.

Propagation By Grafting

Propagation by grafting is used in Europe, but it is not commonly practiced in the United States. It is frequently used to produce unusual plants, such as tree azaleas. Grafting is a means of propagation where a desirable bud or cutting (scion) of an azalea or other plant is attached to the roots or understock of a plant of a similar kind. The two parts join together and grow as one. The understock should be actively growing, but the scion should be dormant. A side graft is recommended, with the cambium layers of the understock (the light green tissue immediately under the bark) and scion matching before securing. Wrap the graft union with damp sphagnum. Cover the entire graft with a plastic bag. Once the scion begins to grow, gradually increase the volume of air by punching holes in the plastic bag. When the scion has hardened off, the top of the understock should be removed above the graft union.

To be successful, sanitation and cleanliness must be observed no matter which method of propagation is used. Remember, the stock plants should be healthy, and the equipment used, the area processed, and the greenhouse should be disinfected.

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Ken Tilt, *Extension Horticulturist*, Professor, Horticulture; **David Williams**, *Extension Horticulturist*, Associate Professor, Horticulture; **Austin Hagan**, *Extension Plant Pathologist*, Professor, Entomology and Plant Pathology; **Pat Cobb**, former *Extension Entomologist*; **Mary Kathryn Gaylor**, former Research Technician, all with Auburn University. Originally prepared by **Ronald L. Shumack**, former *Extension Horticulturist*.

Use pesticides only according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use pesticides on plants that are not listed on the label.

The pesticide rates in this publication are recommended only if they are registered with the Environmental Protection Agency or the Alabama Department of Agriculture and Industries. If a registration is changed or cancelled, the rate listed here is no longer recommended. Before you apply any pesticide, check with your county Extension agent for the latest information.

Trade names are used **only** to give specific information. The Alabama Cooperative Extension Service does not endorse or guarantee any product and does not recommend one product instead of another that might be similar.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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