

## Leaf Spot Resistance and Adaptability of Cleyera Selections in South Alabama

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### Introduction

Cleyera (*Ternstroemia gymnanthera*) is a hardy evergreen shrub with an upright growth habit and dense, dark green foliage, fragrant white flowers, and globose yellow to red fruit. This medium to large shrub, which is a good alternative to red-tip photinia, can be used in foundation, border, hedge, and specimen plantings in home and commercial landscapes throughout Alabama. While cleyera are best adapted to shaded sites, this plant does reasonably well in full sun (Dirr) although leaves of plants in full sun are sometimes discolored.

Until recently, nearly all nursery-grown cleyera were propagated from seed. As a result, considerable differences in leaf color and growth habit were often seen in large plantings of cleyera. Recently, cutting-propagated cleyera cultivars, such as Bronze Beauty, Bigfoot, and LeAnn, have been released.

When compared with many other popular shrubs, cleyera are considered to be largely free of damaging diseases in landscape plantings. In Alabama landscapes, a leaf spot disease, which is caused by the fungus *Cercospora* sp., has been found on 'seedling' cleyera. Small brown spots first appear on the mature leaves at the base of the plant in mid- to late winter. Large red to purple blotches often surround the spots on the upper leaf surface. Heavily spotted leaves often turn bright red before they fall to the ground. Leaf spotting starts in the lower limbs and gradually moves upward into the mid-canopy of susceptible cleyera. By early to mid-spring, diseased cleyera may lose 30 percent or more of their leaf canopy. While *Cercospora* leaf spot will not kill cleyera, badly defoliated plants in landscape plantings are unattractive and the fallen leaves a nuisance to collect.

The objectives of this study were to determine the resistance to leaf spot and the adaptability of several newly released cultivars and 'seedling' cleyera in South Alabama.

### Materials and Methods

Before planting, soil fertility and pH of a Benndale (A) fine sandy loam soil at the Brewton Experiment Field in Brewton, Alabama (USDA Hardiness Zone 8a) were adjusted according to the results of a soil fertility assay done by the Auburn University Soil Testing Laboratory. The simulated landscape planting included five two-plant blocks of Leann, Copper Crown, Regal, Bronze Beauty, Big Foot and 'seedling' cleyera planted on 8-foot centers on rows spaced 10 feet apart. The plants were watered as needed with a drip irrigation system. Beds were mulched with aged pine bark each year. Each spring, Osmocote 17-7-12 slow-release fertilizer was evenly spread around the base of each cleyera. A directed application of 1 pound per acre of Gallery DF and 2 quarts per acre of Surflan T/O were made in mid-February to the mulched beds to control annual weeds. Escape weeds were pulled by hand or controlled with spot applications of 912 Herbicide 6S (MSMA). The centipedegrass alleys between the rows were periodically mowed.

Leaf spot levels were rated using a modified 1 to 10 Florida peanut leaf spot rating scale where 1 = no disease, 2 = very few spots on leaves in lower canopy, 3 = light leaf spotting in lower and upper plant canopy, 4 = some spotting in lower and upper canopy with light (10 percent) leaf loss, 5 = spotting noticeable with moderate (25 percent) leaf loss, 6 = spotting heavy with serious (50 percent) leaf loss, 7 = spotting very heavy with severe (75 percent) leaf loss, 8 = most remaining leaves spotted with excessive (90 percent) leaf loss, 9 = very few remaining leaves covered with spots, and 10 = plants defoliated. The extent of sun scald was also assessed on April 22, 2005 on a 1 to 10 scale, which was based on the percentage of leaves discolored.

### Results

Sizable differences in *Cercospora* leaf spot ratings were noted between the cleyera cultivars in 2003. Noticeable leaf spotting as well as an average of 10 percent premature leaf shed was seen on the 'seedling' cleyera. The level of leaf spotting, however, was not the same on all 'seedling' cleyera. While leaf loss on many plants reached 25 percent, a few of the 'seedling' cleyera remained largely free of leaf spot symptoms. A low level of leaf spotting was seen on the other cleyera cultivars.

*Cercospora* leaf spot ratings for the 'seedling' cleyera were slightly lower in 2004 than in 2003. While some leaf spotting in the lower and middle canopy was

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seen, the level of premature leaf loss was low (see table). The leaf spot rating for Big Foot cleyera was slightly lower compared with that of the ‘seedling’ cleyera. A low level of leaf spot development was also seen on Copper Crown. Regal, LeAnn, and Bronze Beauty cleyera were free of leaf spot symptoms.

In four years after planting, noticeable leaf spotting was seen not only on the ‘seedling’ cleyera but also on the cultivars Copper Crown, Regal, Bronze Beauty, and Big Foot (see table). Cercospora leaf spot ratings for Copper Crown and Copper Crown were slightly below those of Big Foot and the ‘seedling cleyera’. In contrast to the above cleyera cultivars, LeAnn remained free of Cercospora leaf spot.

Sun scald was characterized by a yellowing or chlorosis of the leaves as well as the appearance of pin point purple spot that were sometimes surrounded by a light purple starburst line pattern. No brown or dead spot was seen in the center of these tiny purple spots. In April 2005, this leaf spotting pattern was largely confined to the southeast and southern exposure of susceptible cultivars. Bronze Beauty suffered much heavier leaf discoloration compared with the other cleyera cultivars. The least leaf scald was seen on the ‘seedling’ cleyera.

### Summary

While the level of damage differed from plant to plant, noticeable leaf spotting as well as a low level of premature leaf shed was seen in all three years on the ‘seedling’ cleyera. Cercospora leaf spot ratings for Big Foot cleyera, which increased from 1.4 in 2003 to 4.0 in 2005, eventually were similar to the disease ratings of the ‘seedling’ cleyera. A noticeable increase in leaf spotting was also seen between 2004 and 2005 on Copper Crown, Regal, and Bronze Beauty cleyera. Over the three-year test period, LeAnn cleyera remained free of Cercospora leaf spot.

In addition to Cercospora leaf spot, considerable winter sun scald was seen on Bronze Beauty in 2005. Some sun scald was also seen on the remaining cleyera cultivars.

Due in part to the absence of Cercospora leaf spot and low level of sunscald damage, the most attractive cleyera in this simulated planting was LeAnn.

### Literature Cited

Dirr, M. A. 1998. Manual of Woody Landscape Plants. 5th ed., Stipes Publishing Co., Champaign, IL.

Cleyera Selection	Disease Rating			Sun Scald*
	April 2003	April 2004	April 2005	
LeAnn	1.1	1.0	1.0	2.3
Copper Crown	1.2	1.7	3.0	2.2
Regal	1.1	1.0	3.1	1.8
Bronze Beauty	1.2	1.0	3.3	4.8
Big Foot	1.4	2.5	4.0	2.7
‘Seedling’	4.0	3.1	3.7	1.5

\*Sun scald rated in April 2005.

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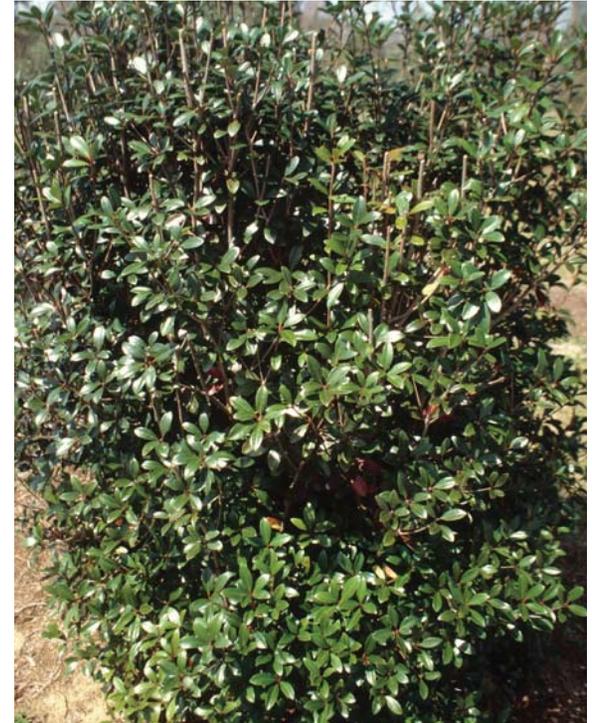
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Bronze Beauty Cleyera



Big Foot Cleyera



Big Foot Cleyera



Physiological leaf spotting on Bronze Beauty Cleyera



Physiological leaf spotting on Big Foot Cleyera



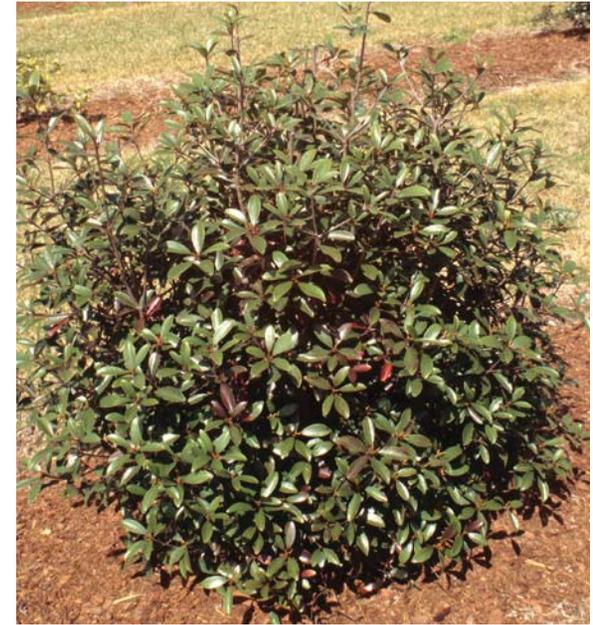
Regal Cleyera



Copper Crown Cleyera



Copper Crown Cleyera



Leann Cleyera



Cercospora leaf spot on a 'seedling' cleyera



Leaf spotting and premature leaf loss on a 'seedling' cleyera



Cercospora leaf spot on a 'seedling' cleyera