

tures down to 18°F, but is not very frost tolerant. If grown in the shade, it would be protected from these frosts. This species will attain a spread of nine feet, in only eight years of proper growing. Supply of this plant is not meeting the demand yet, but there are a dozen nurseries in Florida propagating these plants from seed.

Ceratozamia kuesteriana is a cycad from Mexico that is just now coming onto the scene. The foliage is very frost tolerant, and the stems have proved to be cold hardy down to 17°F. This is a subterranean species, so if the stem is planted below ground level, it would tolerate a lot lower temperatures. This is one of only a few species of cycads that are totally unarmed, or in other words there are no spines on these plants. This species would make a good accent plant near walkways where most people would not want to use other cycads. *Ceratozamia kuesteriana* has what cycad collectors call brown emergent leaves. The new soft leaves come out brown and then harden up to a light green. This color change can be very attractive in the landscape where contrast is needed. A single headed plant will attain a spread of five feet, but multiple heads can be produced to increase the spread to around seven feet in time. This is another plant that would prefer to be in a somewhat shady location, to look it's best. Several years ago two or three thousand plants were imported into Florida. There are

quite a few people with breeding colonies here in Florida. Somewhere around 10,000 seeds are produced each year in Florida, but this will have to increase if demand for this species grows in the future.

Ceratozamia hildae, commonly known as the bamboo cycad, has to be the most exciting new species of cycad to enter Florida. This plant grows more in a shape similar to bamboo instead of having a fountain form shape like most cycads. The foliage as well as the stem are very cold hardy, and have been tested in Louisiana with very good results during the 1989 freeze. Except for bamboo, there are not too many cold hardy plants that have this upright habit. These plants can be used in smaller areas where sagos would be out of the question. The leaves on this species will attain a height of around seven feet, and the leaflets are arranged in clusters that resemble a bow tie in appearance. *Ceratozamia hildae* is a fairly fast growing species, and can become mature in only four to five years. This plant looks it's best in partial shade but can be grown in more sun, or in deep shade. This is a plant that we will have to look for in the future. Around 6,000 seeds are produced each year in Florida, but in five years this figure will increase to 50,000. When more people realize how beautiful and versatile these plants are, there will be a great demand for public and private use.

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NOW YOU SEE THEM, NOW YOU DON'T

ELLEN WEST DEMMY

*Department of Citrus and Ornamental Horticulture
Florida Southern College
Lakeland, FL 33801*

DEREK BURCH

*Horticultural Masterworks
Fort Lauderdale, FL 33317*

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Abstract. Plants for southern gardens that go completely dormant have not received the attention that they deserve in recent years. An annotated list of commonly available types is furnished, with comments on their garden value.

Moving south into Florida seems to change the approach that many people take toward their gardens. True gardeners are not affected as badly, but the average homeowner seems dead set against any plant that is not in full leaf and/or full flower fifty-two weeks out of the year.

What an interesting group of plants this eliminates! Maybe they have forgotten the excitement of the first hint of green as the tip of a bulb pushes through bare soil or mulch or the pleasure of watching the daily progress of leaves and buds until the flower opens.

There are a remarkable number of exciting plants that spend part of our gardening year underground. Spring bulbs in the North are something very special ("bulbs" is shorthand for bulbs, corms, rhizomes and any other underground storage structure). However, in Florida, bulbs and other herbaceous perennials are more varied because we have plants that go dormant not only to avoid the cold but also go dormant to survive droughts. Of course, Florida conditions being what they are, many plants with the genetic make-up that allows them to escape unfavorable conditions by going dormant will stay leafy if the cold or drought is not severe enough to knock them down. South Florida gardeners may not agree with some of the plants included here because the plants in their gardens are never triggered into their dormant mode.

It would be foolhardy to try to generalize the cultural needs of these varied bulbous and rhizomatous plants. However it is probably safe to say that while dormant, these plants are less likely to be damaged by dry conditions than by being too wet. It is also safe to suggest that their fertilization program should have a relatively high level of nitrogen at first to favor vegetative activity but should switch to a higher ratio of potassium to nitrogen for the later part of the cycle of growth.

Designing with bulbs is more fun when the dormancy and new growth is taken as a positive feature rather than a problem. Their placement in southern gardens which are "green" all year does need a little more care than would be the case in the north where most of the garden gives up the battle and

goes underground for the winter months. Look at them as bonus features for an existing landscape rather than primary elements. In this way they are never actually missed—and when they do put in an appearance they make an already attractive scene brighter and more interesting. In many cases their display comes in the hot months of summer when the more permanent parts of the planting are getting a little tired and the garden needs a boost.

Low growing plants dense enough to form a groundcover, such as *kaempferias*, will have a time in the fall when they are obviously in decline. However, this soon passes and the last few old leaves can be covered with a dusting of mulch if it is not convenient to give the full recommended annual mulching treatment at that moment. Larger plants can be disguised in their declining stages by being placed behind non-herbaceous types.

The plants can play varied roles in the garden. Those whose main feature is their flowers will obviously be used to show these off. A group will almost always be more effective than a single plant, but the larger the group the greater the danger of having an obvious bare spot when the plants are dormant. Perhaps the most exciting possibilities with these bulbs come from those that are “tropical” in their appearance—that is with large showy leaves that express an exuberance that it is hard to convey with temperate material. Species of *Amorphophallus* for example, push their single, much-divided leaf blade to a height of several feet on a spotted or blotched petiole, dominating their surroundings. Even the more modest *curcumas* can send a mass of huge foliage to a height that dwarfs most of the permanent plants.

The design possibilities are exciting, and descriptions and illustrations of most of the plants are widely available. Space limitations prevent more descriptions here, but they are worth getting to know, and certainly worth incorporating into the landscape palette.

SOUTHERN BULBS DESERVING ATTENTION

Amaryllidaceae (s.l.)

Crinum, *Hippeastrum* Summer flowers in reds, pinks, white, yellow. Usually smaller (12-24”) than their evergreen relatives.

Lycoris, *Nerine*, *Rhodophiala* Spring, summer and fall blooming species in all colors except blue. Several flower before the leaves are produced.

Narcissus Look for jonquil types for the greatest chance of success in getting the bulbs to naturalize and reflower. South Florida eat your heart out.

Pamianthe Fragrant white flowers in early spring. Frost tender, so doubtful far north in the state.

Eurycles, *Scadoxus*/*Haemanthus* Large spheres of flowers, scarlet in blood lily, white in *Eurycles* which has the most hosta-like leaves of anything outside that genus.

Araceae

Amorphophallus, *Arisaema*, *Dracunculus*, *Sauromatum*, *Taccarum* Various-sized models of single- or few-leaved plants. The biggest carry a much-divided blade several feet across on the top of a tall petiole. Flowers may be spectacularly foul smelling.

Arum, *Zantedeschia* Moderate size foliage and classical flowers. Some are great plants for wet sites.

Caladium New releases by ARC Bradenton are outstanding for color and reliability. Shade and sun-tolerant cultivars available for brilliant color.

Asteraceae

Dahlia Great advances in bedding types with heat tolerance
Helianthus Jerusalem artichoke and its more civilized relatives give brilliant late summer color in poor ground.

Liatris Pink and white “blazing stars” in spires to 24” tall.

Basellaceae

Anredera An old fashioned vine of the south (Madeira vine), valued for its fragrance from relatively inconspicuous flowers.

Cannaceae

Canna Another plant that tolerates wet sites, even to the extent of growing in water. New cultivars from South Africa and Europe have added striking leaf color to the spectacular blooms for which they have been known.

Gesneriaceae

Achimenes Small plants rarely trusted in the open garden, but well able to take moderate shade in weed-free sites and add large flowers in pinks and purples all summer long.

Chrysanthemum Yellow flowers from orange bracts contrast with purple brown foliage on 18 x 18” plants in part shade.

Gloxinia Brazilian sunset, *G. sylvatica*, makes an 18-24” tall red-orange splash from November on in areas with little or no winter cold.

Sinningia Breeding from species such as *S. (Reichsteineria) cardinalis* have added smaller but equally brilliant hybrids that are also better able to handle garden conditions than the florists gloxinia. Nematodes are the chief threat.

Iridaceae

Acidantha, *Gladiolus* Major cutflower crops throughout the state, but curiously neglected for garden use. Almost all colors now available.

Leguminosae

Pachyrhizus A food source (*jicama*) and a strong vine with deep blue flowers in the fall. Seeds freely!

Liliaceae (s.l.)

Alstroemeria Selection and breeding work is adding more heat-tolerant cultivars of various parentage to *A. pulchella*, the parrot flower of old gardens.

Gloriosa Another old-fashioned favorite as a porch climber where the reflexed orange and red plus yellow flowers can be seen close to.

Polyanthes Single and double forms of the 12-15” tall fragrant, white flowers. *Trillium* Wonderful mottled leaves and con-

trasting flowers, with all parts of the 10-18" plant in threes make South Florida envious of woodland gardens in the northern counties.

Oxalidaceae

Oxalis The cheery pink or white flowers, with colored leaves on some species justify the risk of growing these plants which can be very persistent in a garden when established.

Zingiberaceae

Curcuma Hidden gingers, because in some the loose spikes of flowers are concealed by leaves. New forms available now

extend the color range and the flowering season through the warm months.

Globba Dancing Ladies—purple, yellow and white, and some with red leaves make these appealing as 12-24" plantings.

Kaempferia Great ground cover plants. Leaves marked with silver and brown, surround purple or blue and white flowers at the center of each clump.

Zingiber Recent collections are adding small creamy-white coned forms to the familiar pinecone gingers.

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SOUTHERN BLIGHT (*SCLEROTIUM ROLFSII*): A NEW DISEASE OF CAST IRON PLANT¹

R. T. McMILLAN, JR., R. L. VANDE HEI, AND W. R. GRAVES
University of Florida
Tropical Research and Education Center
Homestead, FL 33031

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Abstract. Cast iron plant (*Aspidistra elator* Blume) is a popular landscape plant grown in Dade County, as well as other counties in Florida. In May 1997, in Miami-Dade County Florida, several plants cast iron plant 'Milky Way' and 'Stary Night' from a commercial ornamental container nursery were diagnosed with a root and petiole rot. A *Sclerotium*-like fungus was isolated from the rotting roots and petioles. In June 1997, at a second south Florida commercial ornamental container nursery, a *Sclerotium*-like fungus also was found rotting the roots and petioles of cast iron plant 'Milky Way', causing approximately a 5% loss. Severe infections in both nurseries resulted in death of plants. The *Sclerotium*-like fungus was isolated from infected roots and petioles on potato dextrose agar (PDA) and was identified as *Sclerotium rolfii* Sacc. Mature detached leaves of cast iron plant were inoculated with PDA plugs of *S. rolfii*, placed in a dew chamber at 27°C for 7 days, and observed for symptoms for a total of 10 days. Southern blight symptoms on inoculated plants were identical in all respects to the blight resulting from natural infection. The fungicides azoxystrobin and flubioxonil significantly decreased the in vitro growth of *S. rolfii* but not as much as tebuconazole.

Introduction

The fungus *Sclerotium rolfii* Saccardo with *Athelia rolfii* as its teleomorph (Alexopoulos et al. 1996) was first reported in Florida in 1893 (Chupp and Sherf 1960). Since then it has been observed in nearly all countries and states between the

northern and southern latitudes of 38° (Chupp and Sherf 1960). The fungus attacks some 200 different types of plants, including both cultivated plants and weeds (Alfieri et al. 1991; Pirone 1970; Preston 1968; Sharma and Sankaran 1984; Chupp and Sherf 1960).

In south Florida, *Sclerotium rolfii* occurs on crop leaves, stems, and pods during the wet warm summer months. Recently, *Sclerotium rolfii* was found on the stems and leaves of commercial nursery potted cast iron plant (*Aspidistra elator* Blume) 'Milky Way' and 'Stary Night'. The purpose of this research was to reproduce the disease in cast iron plant and screen for effective fungicide for the control of *S. rolfii*.

Materials and Methods

A culture of *S. rolfii* originally isolated from natural infected *Aspidistra elator* was transferred periodically on potato-dextrose agar (PDA) and maintained at 25°C. This isolate was employed throughout this study.

All inoculations were accomplished by inoculating mature detached leaves of cast iron plant 'Milky Way' with PDA plugs of *S. rolfii*. Inoculated leaves were placed in a dew chamber at 25°C for 7 days, and signs of symptoms were noted over 10 days.

In vitro chemical screening studies were conducted with 0.77 mg/100 ml of tebuconazole (Folicur 3.6F), 7.5 mg/100 ml of flubioxonil (Medallion 50WP), and 530 µl/100 ml of azoxystrobin (Quadris 2.08F). Fungicides were added to a cornmeal agar (CMA) and 20 plates of each were poured. The inoculum was prepared by growing *S. rolfii* on CMA plates and placing a 3 mm disc of sterile filter paper onto the agar and allowing the fungus to over grow the disc. The *S. rolfii* inoculum discs were then transferred to plates containing one of the three incorporated fungicides. The inoculated plates were incubated at 25°C with rate of growth measured in millimeters over a 5 day period. All of the fungicide studies were conducted in triplicate.

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