

Ornamental Research News

Central Florida Research and Education Center

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Something Good from Something Bad

Physiology

Dr. R.W. Henley

Florida nurserymen have a new aglaonema cultivar to add to their inventories. *Aglaonema* 'Maria Christina' is a relatively new cultivar which resembles *Aglaonema* 'Silver Queen' in leaf color and variegation, but has a more compact growth habit. Several growers have commented that 'Maria Christina' is more chill resistant than 'Silver Queen'. To verify this claim, 20 plants of both cultivars were grown with the intent of subjecting three groups of each to specific chilling temperatures for 12 hours. We would then observe them for symptoms of chilling injury and compare them with a fourth group which was not chilled. Since 'Silver Queen' is one of the most chill sensitive of all foliage plants, a difference in response to specific chilling temperatures was expected.

Unfortunately, the greenhouse where the plants were growing experienced unplanned chilling temperatures when the only heater in that greenhouse failed the night of December 25, 1993. The lowest temperature was not recorded, but was suspected to have been between 35 and 40°F for four to six hours.

Normally, the minimum night temperature in that greenhouse would have been held at 65°F. However, since both cultivars were growing side by side on the same bench, it was assumed that the temperature was uniformly cool around both groups of plants during the chilling exposure and, despite the fact that conditions were unknown, it was felt that useful observations could be made.

Damage to the dominant shoots of 'Silver Queen' and 'Maria Christina' was evaluated three weeks after the chilling exposure. Symptoms appeared first on lower leaves and gradually progressed upward over time. Damaged tissue had a darkened, water-soaked appearance without necrosis. Our data supported grower observations of the relative chill sensitivity of 'Silver Queen' and 'Maria Christina'. Although the temperature range was sufficiently low to damage both cultivars, the overall damage rating computed for 'Silver Queen' was more than two times greater than that of 'Maria Christina'. 'Silver Queen' had 57.6% of all its leaves blemished compared to 33.1% on 'Maria Christina'. Additionally, the

level of damage to individual leaves with chilling injury symptoms, was worse on `Silver Queen'. The percentage of severely damaged leaves (leaves having two thirds or more of the leaf surface blemished) was four times greater on `Silver Queen' than on `Maria Christina'. It is likely that less severe temperatures might not have damaged `Maria Christina', yet still would have caused extensive visible damage to `Silver Queen'.

One of the most encouraging observations after our "Big Chill" was the fact that two other aglaonema cultivars in the same greenhouse had no conspicuous symptoms of chilling damage. These two cultivars, `Flamingo' and `Silver Bay' are hybrids, which have been developed and released to industry by Dr. Jake Henny, Geneticist at the Central Florida Research and Education Center-Apopka.

As growers plan aglaonema production, it makes good sense to utilize those cultivars which provide a margin of chilling resistance. It will also benefit others in the pipeline from the wholesale grower to the end consumer. Consumer satisfaction with superior foliage plants should increase sales of the product.

Regional Plant Lab

On Center

C.A. Conover, Center Director

When consolidation of the CFREC units at Apopka, Leesburg and Sanford occurs in a new facility at the Apopka location, the opportunity to develop a regional plant diagnostic laboratory will exist. The idea for plant diagnostic laboratories came from the Florida Legislature about ten years ago. The original concept was to create regional laboratories to serve agricultural interests on a daily basis by allowing producers to bring in crop problems during normal working hours for diagnosis. If an immediate analysis could not be made, producers could elect to pay a small fee to have a disease problem determined or have soil tested. Unfortunately, the Legislature stopped further funding after laboratories were established at Homestead, Immokalee and Quincy. However, with consolidation of the units at Apopka, we will have space for a regional plant diagnostic laboratory and the potential to gain funding for this service to the industry. Among the additional diagnostic services we expect to have available at the new facility will be such aids as a computer dedicated for access to the IFAS pest control guides and other IFAS publications on CD-ROM.

Next Month: Industry funded research

Heat Stress of Foliage Plants

Physiology

Drs. C.A. Conover & R.T. Poole

As Spring gives way to Summer, thoughts of heating during frosty nights are a thing of the past for another season. Temperatures in the low to mid-nineties become common, yet problems associated with high temperature extremes can occur during the summer months if care is not taken. In order to maximize the growth and quality of foliage plants, growers frequently attempt to maintain optimum growing temperatures in production areas, with typical thermostat settings ranging from 85 to 95°F. Published research shows that some foliage plants grow well at temperatures between 100 and 110°F, others grow best at lower temperatures (90°F).

An experiment to examine the effects of high air temperatures on lipstick plant, silver portrait calathea, croton 'Petra', pothos, green maranta, green peperomia, and heart-leaf philodendron was conducted in the spring of 1986. The experimental treatments included temperatures of 90, 95, 100, and 105°F, in combination with fertilizer rates at 1, 2, and 3 times the recommended rates.

All of the plants tested showed reduced quality and growth as the maximum temperatures increased. Grades for calathea and pothos seemed to be least affected. Philodendron and maranta showed no differences at maximum temperatures up to and including 100°F, but at 105°F plant grades were considerably lower. Croton and peperomia grew satisfactorily at 90 and 95°F, but did poorly at higher maximum temperatures, while lipstick plants suffered at all temperatures above 90°F. Fresh weights for all plants were best at 90°F except for calathea and maranta where the greatest growth occurred at 95°F.

The fertilizer levels tested had little effect on the plants in this test. The pH and soluble salts, measured only on the peperomia mix, showed no change with increasing maximum temperatures, though the pH and soluble salts did increase as the fertilizer rates increased, as expected.

This research, as well as previous studies, indicates that cooling below 95°F may not give added benefit to most foliage crops. However, almost everyone who works in greenhouses will agree that cooling to 90°F or below may increase labor comfort and productivity.

Details of the results of this experiment including maximum recommended temperatures for the crops tested can be found in the original research report entitled: Heat Stress of Foliage Plants, by Drs. C.A. Conover and R.T. Poole, CFREC-Apopka Research Report, RH-87-2.

Fusarium Leaf Spot of Dracaenas

Seasonal Watch

Dr. A.R. Chase, Plant Pathologis

One of the first diseases I worked on in Florida was a fungal leaf spot of *Dracaena marginata* or red-

edge dracaena. It is caused by *Fusarium moniliforme* and occurs on many of the dracaenas grown. The disease was actually first described in Hawaii but has been found everywhere that the plants are commercially produced.

Initially, symptoms are found in the whorl of the dracaena where water collects and fungal spores have a chance to germinate and infect newly emerging leaves. As the leaves grow, these spots enlarge and turn yellow and finally have a brown or reddish-brown border. Many times they join and, in severe infections, the center of the plant can rot completely and stop terminal growth.

One of the best ways to control this disease is to keep the whorls of the plants from collecting water. Since this is generally not an option due to exposure to rainfall and overhead irrigation, preventative applications of fungicides have been the key to disease control. Over the past 14 years, the best control of this disease has been given by Daconil and Chipco 26019.

Most recently, I completed work on susceptibility of many dracaena species and cultivars to fusarium leaf spot. It was clear that some of the *D. marginata* cultivars tested were considerably more susceptible to this disease than others. The worst disease occurred on Magenta and the standard *D. marginata*. The variegated forms such as 'Tricolor' and 'Bicolor' were considerably more resistant than 'Colorama' to this disease.

When choosing control strategies, remember to minimize exposure of the plants to overhead irrigation, choose resistant cultivars when possible, apply fungicides as needed, and keep in mind that some other relatives of dracaenas (such as sansevierias and pleomeles) are also susceptible to this disease.

For further information on resistance levels of dracaenas please see:
Fusarium Leaf Spot of Dracaena - Resistance of Species and Cultivars,
by A.R. Chase, CFREC-Apopka Research Report, RH-93-10.

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Ornamental Research News - Chris Fooshee, Editor
