Acknowledgments

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Summary

Centipedegrass turf grown in 10-inch pots and parasitized mainly by ring nematodes (Criconemoides citri) showed increased growth and improved appearance when treated with chemical drenches, as compared to untreated controls. Nematocides used were Bayer 25141 at 32 lbs/A, Diazinon A1619 at 32 and 64 lbs/A, Nemagon at 86.5 lbs/A, Niagara 9227 at 16 and 32 lbs/A, and Zinophos at 32 lbs/A. Whereas all chemicals significantly reduced nematode populations up to three months after treatment, only Nemagon and Niagara 9227 at 32 lbs/A were significantly effective after six months.

The above materials, including Diazinon AG500 at 64 lbs/A, were applied to replicated, randomized 7 X 7-ft. plots of centipedegrass turf parasitized mainly by meadow (Pratylenchus goodeyi), stubby root (Trichodorus christiei), and sheath (Hemicycliophora parvana) nematodes. All chemicals significantly reduced nematode populations for six weeks after treatment. Only Bayer 25141 at 32 lbs/A remained effective 12 weeks after treatment. None of the materials gave significantly different nematode counts from those of untreated controls 20 weeks after treatment, although nematode populations were reduced as much as 68% as compared to controls.

Diazinon AG500 at 32 lbs/A applied to nine replicated 5 X 5-ft. plots significantly lowered nematode populations seven weeks after treatment, as compared to an equal number of control plots. This effect was apparent, although not at a statistical level of significance, even at 16 weeks after treatment.

Literature Cited


Cercospora leafspotting fungi that attack orchids in Florida

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The fungus genus Cercospora Fresenius of the Fungi Imperfecti belongs to the order, Hypomycetales. Chupp (2) lists over 1,150 genera of plants attacked throughout the world by species of Cercospora. He lists four species of Cero-
Four of the above named species of *Cercospora* have been found attacking orchids in Florida. They are as follows: *C. epipactidis*, *C. odontoglossi*, *C. peristeriae*, and *C. dendrobii*. These four species will be described in detail in this paper. To date, neither *C. angraeci* nor *C. cypripedii* has been reported attacking orchids in Florida.

**Leafspot, Cercospora epipactidis C. Massalonga**

Chupp (2) states that *Epipactis latifolia* All. and *E. palustris* Crantz are attacked by this fungus in Italy, Germany, and Russia. Throughout Florida, *Phaius grandifolius* Lour. is commonly found infected while some of its hybrids, such as *P. x Gravesiae*, are somewhat resistant. The native wild orchid, *Bletia purpurea* (Lam.) DC., is occasionally found infected by this fungus.

**Symptoms**

On Nun’s Orchid, *Phaius grandifolius*, the first symptoms are tiny, sunken, yellow spots on the under surface of the leaf. They soon advance so they are noted on either leaf surface. These enlarge in a few days and are eventually sunken, purple-black in color with a raised margin of a little darker color. Mature spots are about \( \frac{1}{4} \) inch in diameter but may be somewhat larger (Fig. 1). Some may coalesce to make large, irregular lesions. On older lesions, the centers usually fall out. Where spots develop over a large vein or veins, they may remain attached to the leaf after the rest of the tissue has fallen out.

Infection of *Bletia purpurea* starts as a small, usually oval but sometimes round, whitish area on the under surface of the leaf. Eventually the infection is noted on both leaf surfaces. As the

*Figure 1.* Leafspot, *Cercospora epipactidis* C. Massalonga, on the top surfaces of the leaves of the Nun’s Orchid, *Phaius grandifolius*. 
spot enlarges, the center turns dark purple while the advancing margin of the spot remains whitish. In older spots, the center is purplish brown. When the fungus becomes well established, it is not uncommon to find numerous leafspots per leaf.

**Causal Organism**

Chupp (2) describes the causal organism as follows: "Fungus fruiting hypophyllous, visible under hand lens as minute, black pustules; stromata irregular, dark brown, slight to 50 μ in diameter; some fascicles dense, divergent; conidiophores pale to medium brown, pale and more narrow toward the tip, sparingly septate, not branched, straight or mildly geniculate, medium spore scar at the subtruncate tip, 4-6 x 10-45 μ or occasionally as long as 100 μ; conidia hyaline, acicular, straight to curved, indistinctly multiseptate, base truncate, tip subacute, 3.5-5 x 30-130 μ".

**Control**

Either ferbam or zineb at the rate of 1½ to 2 pounds per 100 gallons of water have been found effective in controlling the fungus.

**Leafspot, Cercospora odontoglossi Prillieux and Delacrois**

This fungus has been reported by Chupp (2) as attacking *Odontoglossum citrosum* Lindl., *O. crispum* Lindl., and *O. sp.* in France and Massachusetts. In 1960 it was found on several plants of *Cattleya intermedia* Graham at Miami, Florida. Recently this fungus disease was found attacking seedlings of Cattleya-type orchids at Ft. Myers, Miami, and Winter Haven. Seedlings in community pots and plants just removed from community pots are most susceptible. A few large three-inch pot seedlings of Cattleya-type orchids have recently been found infected with this fungus.

![Figure 2.—Leafspot, Cercospora odontoglossi Prillieux and Delacrois, on under sides of leaves of community pot size seedlings of Brassolaeliocattleya x Mem. Crispin Rossales.](image-url)
Symptoms
On seedlings in community pots, symptoms are first noted on the under sides of the leaves as tiny, slightly raised, dark brown spots (Fig. 2). Where only a few of the spots are present, little damage is noted. The fungus may infect the whole leaf. When this happens, the entire leaf dies. The corresponding top leaf surface becomes chlorotic and, if infection is severe, finally becomes necrotic. The fungus on young seedlings may be confused with spider mite injury which it resembles. However, lesions caused by mites are sunken while those caused by Cercospora odontoglossi are slightly raised.

Leaves of a few nearly mature seedlings have recently been found infected with this fungus. Yellow, irregular spots were noted on both leaf surfaces. Older lesions were slightly sunken and were purplish black in color. In no case was the entire leaf surface infected as is the case with young seedlings (Fig. 3).

Control
Control measures have not been worked out for this fungus. The few growers that have attempted to control this disease have had greater success with captan than with zineb or ferbam. However, none of the above fungicides have completely eliminated the disease even after five spray applications at two-week intervals.

Leafspot, Cercospora peristeriae sp. nov.
This new species of Cercospora has been found on Dove Orchid, Peristeria elata Hook, throughout Florida, wherever this species is grown in any number.

Symptoms
The first symptoms are yellowish to pale brown, oval to elongate spots first noted on the under surface but soon showing on both leaf surfaces. Later the spots enlarge, become tan with a purple border, 5-50 mm in diameter. This fungus continues to produce its spores for a considerable period of time and, if not controlled, may infect new leaves as they develop (Fig. 4).

Infection is first noted 10 to 14 days following inoculation. Penetration of the fungus spores

Figure 3.—Leafspot, Cercospora odontoglossi Prillieux and Delacroix, top surface (left) and bottom surface (right) of leaf of Brassolaeliocattleya x Ethel McBroom.

Figure 4.—Leafspot, Cercospora peristeriae Burnett, on bottom surface of leaf of Dove Orchid, Peristeria elata.
is through the stomates on the under sides of the leaves.

Causal Organism

*Cercospora peristeriae* sp. nov.1 2

Maculae ovatae vel extensae, 5-50 mm longis, primo falvidis vel pallide, brunnae, cum cinctae purpurae brunnae. Caespitulis fere hypophyllis; stromata atrofusea, 15-50 μ in diam, plerumque denique stomata conplentes. Conidiophoris 3-20 in fasciculatis; conidiophoris pallide olivaceae brunneae, 10-25 x 4-6 μ, leviter goniculatis, simplicia, septatae cum parvus cicatrix apicibus. Conidiis 45-100 x 2-5 μ, hyalina, 4-10 septatae, acicularis, basic truncatis, apicibus.

Parasitit. *Peristeria elata.*

Status, perfectus ignatus

Habitatis, Boynton Beach and Miami, Florida

The spots enlarge, turn tan with a purple border 5-50 mm in length; fruiting chiefly on lower leaf surface; stromata dark brown, 15-50 μ in diameter, often filling the stomatal opening; fascicles 3-20 spreading stalks; conidiochore pale olivaceous-brown, not branched, septate; small spore scar at the rounded end, slightly goniculate, 4-6 x 10-25 μ; conidia hyaline, acicular, 4-10 septate, base truncate, tip acute, 2-5 x 45-100 μ.

Control

Extensive control studies have not been carried out. However, no new infection was noted on a few plants that were sprayed with a fixed copper fungicide at the rate of 2 pounds per 100 gallons of water.

LEAFSPOT, *Cercospora dendrobii* sp. nov.

This fungus disease of Dendrobium was first found at West Palm Beach, Florida, in October, 1961. Since that time, it has been found to be widespread throughout the State on many Dendrobiums, both evergreen and deciduous types. *Dendrobium x New Guinea*, *D. phalaenopsis* Fitzg., *D. nobile* Lindl., and many of their hybrids are hosts.

Symptoms

The first symptom is a light yellow area on the under side of the leaf. The area continues to enlarge in a circular or irregular pattern and may eventually engulf the whole under side of the leaf. Usually, more than one irregular, yellow area develops. As the spots get older, slightly sunken, purple-black lesions develop in these yellow areas. Soon after infection begins, a corresponding yellow-green area can be noted on the top surface of the leaf (Fig. 5). As the spots become old, they turn purplish black or black in color and may be confused with mite damage. Heavily infected leaves are shorter lived than healthy leaves and eventually fall from the plant. Unless controlled, the fungus spores on diseased leaves are capable of infecting nearby Dendrobium plants.

Infection is noted 10 to 21 days following inoculation. The fungus spores penetrate anywhere on the under surfaces of the leaves but most commonly through the stomates.

Causal Organism

*Cercospora dendrobii* sp. nov.3 4

Maculis foliorum areis flavis usque ad flavis-viridibus superficie inferiori foliorum. Macu-
Leafspots are yellow to yellow-green areas on under surface of leaf. Spots are at first small but may eventually cover entire under surface of leaf. Corresponding top leaf surface eventually shows a yellow-green area fruiting as olivaceous patches on under surface of leaf through stomates. Stroma are lacking or show a few brown cells. Conidiophores are in fascicles of 2 to 10, brown to pale olivaceous-brown, plainly multiseptate, often constricted at septa, geniculate, bluntly rounded at tip, branched, 3-5 x 20-100 μ. The conidia are pale olivaceous-brown, obclavate, 3-8 septate, mostly 5 septate, base truncate, tip subacute, 2-4 x 15-75 μ.

INFLUENCE OF CHEMICAL PRESERVATIVES ON KEEPING QUALITY OF ASTERS, CARNATIONS, CHRYSANTHEMUMS, AND GERBERA DAISIES

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It has been demonstrated that both pre- and postharvest production techniques drastically affect the keeping quality or vase-life of flowers (1, 2, 3, 5, 7). Proper handling techniques should increase the demand for Florida cut-flowers by (a) extending the flower vase-life and (b) making distant potential markets a reality. Numerous commercial cut-flower preservatives have been used with limited success depending upon the plant species involved (1, 4, 6). These patented preservatives usually contain some form of.