produced by the 5 and 10% colloidal phosphate-amended manure, and the 7.5 and 10% Emathlite-amended manure treatments.

**Summary**

Two of the 4 materials, gypsum and 20% superphosphate, tested in as amendments for poultry manure produced acceptable results. The addition of 20% superphosphate to fresh manure produced above average odor control, excellent fly control, high level of N conservation, P, K and soluble salts. Two rates of superphosphate amended manure, 5 and 10% were included in 6 treatments producing larger plants of ligustrum and podocarpus, as measured by rating of growth during growing season and at termination of experiment. Addition of gypsum to fresh manure resulted in excellent odor control, moderate fly control, high level of Ca and a lower soluble salt level than superphosphate. Six treatments producing larger plants of ligustrum and podocarpus included 5% and 7.5% treatments of gypsum-amended manure.

The amendments, colloidal phosphate and Emathlite VPM 150, produced unsatisfactory results. Addition of colloidal phosphate to fresh manure resulted in moderate odor control, fair fly control, low N conservation and high pH. Five colloidal phosphate amended manure treatments—two of 5% rate, one 7.5% rate and two 10% rates—were included in the 16 treatments producing smallest plants of ligustrum and podocarpus. Addition of Emathlite VMP 150 to fresh manure resulted in fair odor control, moderate fly control, low N conservation and high pH. Seven of 16 treatments producing smaller plants of ligustrum and podocarpus involved Emathlite amended manure, one of 5% rate, three each of 7.5% and 10% rates. These experiments indicate that a safe rate of poultry manure for container grown ligustrum and podocarpus depended on whether or not the manure had been amended with an effective additive. Untreated manure at 7.5 and 10% rates killed podocarpus and reduced the growth of ligustrum. Of the 16 treatments of amended manure producing smaller plants of ligustrum and podocarpus included 4 of 7.5 and 5 of 10% rates of colloidal phosphate and Emathlite.

**LITERATURE CITED**


**SOUTHERN BLIGHT OF SCHEFFLERA**

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**Abstract**

Schefflera, *Brassaia actinophylla* F. Muell., often known as the 'umbrella tree' is a subtropical species grown as a commercial foliage plant. In 1969 specimens were observed with symptoms of southern blight caused by the fungus *Sclerotium rolfsii* Sacc. The symptoms consisted of a brown stem rot which completely encircled the stem at the soil line. The necrotic stem tissue was colonized by a weft of coarse, subhyaline strands of mycelium interspersed with small, tan, spherical sclerotia of the fungus. Experimental inoculations with the fungus reproduced the disease, culminating in the complete collapse and death of young plants within
2-4 weeks. Of six fungicides (Benlate, Botran, Daconil, Fermate, Mertect, Terraclor) tested experimentally as post-emergence soil drenches for the control of southern blight of young seedlings, Terraclor (75 WP, 1½ lb./100 gal. water), Daconil (75 WP, 1½ lb./100 gal water), and Fermate (76 WP, 3 lb./100 gal water) provided effective disease control. Phytotoxicity of Terraclor, Daconil and Fermate was negligible, moderate and severe, respectively.

**Introduction**

Schefflera is a beautiful evergreen tree native to Australia (2). It is commonly seen in Java and other regions of the tropics as well as in subtropical areas such as South Florida, where it can attain a height of 40 ft but is more commonly observed at heights up to 25 ft (3). Schefflera is also grown as a potted house plant for its palmately-compound foliage.

Reports of serious diseases affecting Schefflera are few. The brown leaf spot caused by *Alternaria actinophylla*, reported by Miller (4), and the disease reported here fall within this category.

During the fall of 1969, young plants of Schefflera were observed with symptoms indicative of southern blight. The plants exhibited wilting of foliage and brown rot at the base of the stem near or at the soil line. Isolation from necrotic stem tissues resulted in the establishment of *Sclerotium rolfsii*.

**Materials and Methods**

Young, established plants grown singly in 4-inch pots were used in the test for fungus pathogenicity. The plants were 6 to 8 inches tall and in a vigorous state of growth. A total of 24 plants was randomly divided on a greenhouse bench into two well-separated groups, 12 for inoculation, 12 for controls. Each pot was placed in a clay saucer which always contained water.

The fungus isolate of *S. rolfsii* was grown on Petri plates of potato dextrose agar (PDA: extract of 200 g cooked potatoes, 20 g dextrose, 20 g Difco agar per liter). Five Petri plate cultures, 26 days old, containing a moderate number of sclerotia, were blended for 1 min and made up to a total volume of 600 ml with sterile tap water. Fifty ml of the inoculum were poured onto the soil and at the base of the pot in each of 12 pots. The 12 control pots were treated similarly, except that sterile PDA was substituted for *S. rolfsii*-infested plates. Following inoculation the soil surface of all pots was lightly covered with approximately ¾ inch of sterilized greenhouse compost soil. During this test for pathogenicity, greenhouse temperatures ranged from 13-32 C.

The chemical control of *S. rolfsii* was evaluated in two experiments under greenhouse conditions. In the first experiment 60 new 4-inch plastic pots containing steam-sterilized German peat were each seeded with 20 Schefflera seeds. After 2 weeks germination, infestation of 30 pots was effected by placing into a hole made in the center of the pot approximately 4 gm of a thoroughly chopped and mixed 2-week-old *S. rolfsii*-infested wheat culture (100 g wheat, 175 ml distilled water autoclaved for 60 min) grown at 30 C. The noninfested pots received the same quantity of autoclaved wheat. Watering of the pots when needed was accomplished with a fine misting nozzle. Twenty-four hours after infestation, each chemical treatment was applied to five infested and to five noninfested pots at the rate of approximately 157.7 ml per pot. Control infested and non-infested pots received the same quantity of water. The chemical tests and their concentration per 100 gal water were Benlate 50 WP (1 lb), Fermate 76 WP (3 lb), Terraclor 75 WP (1½ lb), Daconil 75 WP (1½ lb), and Mertect 60 WP (1 lb).

The second experiment was similar to the first except for the following changes: the inoculum and seedlings were 3 instead of 2 weeks old at the time of infestation and the number of pots decreased to 50; Daconil and Benlate were deleted from the test and Botran 75 WP (1½ lb) included; and the concentration of Mertect was increased to 1½ lb. The greenhouse temperatures ranged from 17-39 C during both experiments.

Two weeks after drenching, the remaining healthy seedlings were counted and phytotoxicity of the chemical treatment on the noninfested, chemically treated pots rated in reference to the control according to the following scale: 1 = no difference; 2 = approximately ½ control size; 3 = approximately ¼ control size; 4 = approximately ⅛ control size; and 5 = approximately ¼ control size.

**Results**

The first visible symptoms of infection oc-
curred 12 days following inoculation. A light brown, hydrotic necrosis was evident on the basal areas of the stem at the soil line. The lesions completely encircled the stem and were delimited from healthy stem tissues by a thin, dark brown border (Fig. 1A). The necrotic stem was colonized by a coarse, subhyaline weft of mycelium which was interspersed with tiny, spherical tan to brown sclerotia similar to mustard seed (Fig. 1B). The coarse weft of mycelium spread out from the necrotic basal stems onto the surface of the soil. In 4 weeks, wilting of the foliage was evident followed by complete collapse of the plants occurring at the soil line. In some cases infected plants produced adventitious roots from the stem just above the infected areas, displaying an attempt at plant survival. Isolation from experimentally inoculated plants resulted in recovery of the test fungus, S. rolfsii. In contrast, all 12 control plants remained healthy throughout the period of the experiment.

Terraclor and to a lesser degree Daconil and Fermate applied as post-germination drenches gave control of S. rolfsii blight of Schefflera seedlings (Table 1). Of these three chemicals, only Terraclor proved to be both effective in disease control and safe for use on Schefflera seedlings.

**Conclusion**

The reproduction of southern blight through experimental inoculations of Schefflera with S. rolfsii clearly establishes the pathogenicity of the fungus, thereby including an additional host to the extensive host range of this fungus (1).

Control of this disease in the seed bed may be achieved with a post-germination drench of Terraclor and appears to be safe to Schefflera seedlings when applied at the concentration employed in this research. It must be stressed, however, that the use of Terraclor is only recommended in peat media and should be applied when temperatures are below 29.5 C in a manner which keeps the chemical off the foliage. If this is impossible, fungicide drenching should be followed with a light foliage watering to remove the fungicide. Terraclor should only be applied once a year to the same media.

**LITERATURE CITED**

Table 1. The influence under greenhouse conditions of post-germination fungicide drenches upon southern blight of 2-3 week old Scefflera seedlings and an index of phytotoxicity to seedling growth.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>1b/100 gal water</th>
<th>Average number of seedlings remaining/pot</th>
<th>Phytotoxicity rating*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>noninfested infested</td>
<td></td>
</tr>
<tr>
<td>Test 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terraclor 75 WP</td>
<td>$\frac{1}{2}$</td>
<td>17.2</td>
<td>16.2</td>
</tr>
<tr>
<td>Daconil 75 WP</td>
<td>$\frac{1}{2}$</td>
<td>18.6</td>
<td>12.0</td>
</tr>
<tr>
<td>Fermate 76 WP</td>
<td>3</td>
<td>18.0</td>
<td>10.6</td>
</tr>
<tr>
<td>Benlate 50 WP</td>
<td>1</td>
<td>17.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Mertect 60 WP</td>
<td>1</td>
<td>18.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td>17.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Test 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>15.2</td>
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<tr>
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<tr>
<td>Botran 75 WP</td>
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<tr>
<td>Control</td>
<td></td>
<td>16.8</td>
<td>0.0</td>
</tr>
</tbody>
</table>

* 1 = no difference; 2 = approx. 3/4 size of control; 3 = approx. 1/2 size of control; 4 = approx. 1/3 size of control; 5 = approx. 1/4 size of control.

**BACTERIAL LEAF SPOT OF SOME COMMELINACEAE CAUSED BY THE CARNATION LEAF SPOT PATHOGEN, PSEUDOMONAS WOODSII**

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**ABSTRACT**

Specimens of Setcreasea purpurea Boom received in 1969 exhibited circular, sunken, water-soaked spots with faded, reddish yellow margins. Isolations consistently yielded a white bacterium which was subsequently identified as *Pseudomonas woodsii* (E. F. Smith) Stevens, the causal agent of leaf spot of carnation. Artificial inoculations with the bacterium on *S. purpurea*, *Dichorisandra reginae* (L. Linden & Rodigas) W. Ludw., and *Zebrina pendula* Schnizl., all members of the family Commelinaceae, produced water-soaked spots. These lesions later became sunken and tan to black in the center, with hydrotic margins. Inoculations on carnation with the isolate from *S. purpurea* and with an isolate of *P. woodsii* obtained from carnation produced identical symptoms. These begin as circular dark green spots which later become somewhat elongated, light tan lesions with purple streaks and irregular purple margins. Thus, these three additional species in the family Commelinaceae are established as possible alternate hosts of the carnation bacterial leaf spot pathogen.

**INTRODUCTION**

In March and April 1969, specimens of *Setcreasea purpurea* Boom were received from a...