

REPORT ON PHYTOPHTHORA CROWN ROT OF PETUNIA

Douglas J. Phillips and James L. Green¹

Control of Phytophthora crown rot of Petunia was achieved in the field by soil fumigation with Mylone or by a weekly drench of Dexon (Fig. 1.). This article presents the results and is a preliminary report of a study aimed at control of this disease in the home garden.

Since 1958 considerable losses of petunias have occurred in greenhouse bedding operations and in home gardens in the vicinity of Denver, Colorado. When seen in the greenhouse the disease develops typically in one area of a flat. Thereafter the rest of the plants develop symptoms

rapidly (Fig. 2). In home gardens plants generally become unthrifty soon after transplanting (1).

Symptoms (Fig. 3) include a black discoloration and a dry rot of the crown and lateral branches near the soil line. This is accompanied by wilting and eventual death.

Control may be achieved rather easily under greenhouse conditions by use of steamed soils and raised benches. If facilities for steaming or fumigation are not available, application of Dexon may be practical (1).

¹James L. Green is an undergraduate research assistant at CSU.

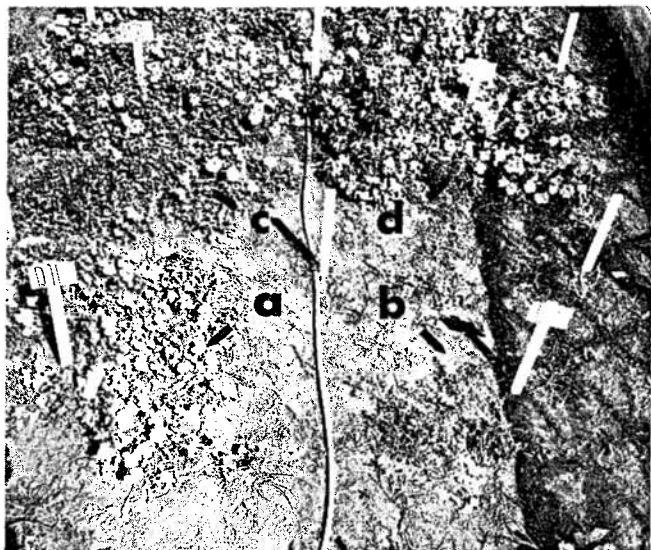


Fig. 1. Control of *Phytophthora* crown rot of petunia obtained by; a - Dexon drench, b - control plot, c - plot treated with both Mylone and Dexon, d - Mylone fumigation.



Fig. 2. Symptoms of *Phytophthora* crown rot on petunias growing in a flat.



Fig. 3. Section of crown split longitudinally. Arrows show black discoloration of crown and lateral branches.

Description and preparation of the plots

An area 10 by 40 feet between two greenhouse wings was divided into 16 plots. The soil, a sandy clay loam, was cultivated and planted with petunias in early June. The area was uniformly infested with pure cultures of *Phytophthora parasitica* Dast. grown in the laboratory on sand cornmeal medium. After the disease incited by this fungus, *Phytophthora* Crown Rot, developed throughout the plots, the plants were incorporated into the soil by using a rototiller. This area was then considered ready for the experimental treatments.

Treatment of the plots

Four test treatments replicated 4 times made up 16 plots. The treatments were: Mylone (dimethyltetrahydro 1,3,5,2H-thiadiazine-2-thione) at 350 lb active material/acre or 0.8 lb active material/100 sq ft; a weekly Dexon (p-dimethylaminobenzenediazo sodium sulfonate) drench of 8 g of 70 percent active in 12 gals of water/100 sq ft; a combination of both the Mylone and the weekly Dexon drench; and a control with no chemical treatment.

The soil was incorporated with the Mylone, sealed 3 days with plastic, and allowed to aerate 24 days after the seal was removed. The area was replanted on July 16 and the Dexon treatments begun. Twenty petunia plants, var. Pink Chiffon, were planted in each of the 16 plots. The Dexon treatments were applied weekly until August 20th. During the summer the number of diseased plants was recorded periodically from the inner 2 rows of each plot (10 plants). Laboratory isolation from diseased plants confirmed the loss of plants was incited by *P. parasitica*.

Results of the treatments

Figure 4 shows the average number of living plants in each treatment at the times indicated by the graph. Mylone, weekly Dexon drenches, or the combination of these two treatments achieved control. An analysis of the total loss in each treatment showed each gave statistically significant control.

Plant loss occurred early in the season when treated with Dexon whereas the loss occurred late in the season in the Mylone treatment. One might assume that the Mylone fumigation successfully eliminated the pathogen, and the loss late in the

season was due to the reinvasion from neighboring plots. The combination of the Mylone and Dexon probably held this recontamination to a minimum.

These results cannot form the basis for a general recommendation to petunia growers until the treatments are simplified and further tested. These results do show, however, that a high degree of control may be achieved under field conditions.

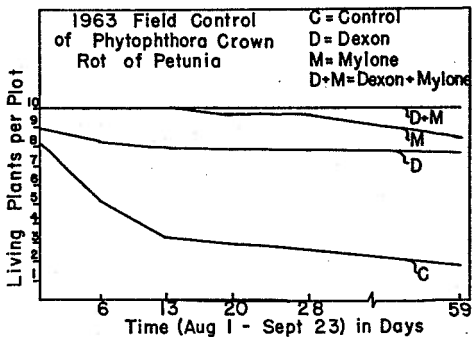


Figure 4. The effects of soil treatments on the loss of Petunias caused by *Phytophthora parasitica*.