

COMPARISON OF TWO SYSTEMS OF APPLYING FUNGICIDES FOR THE CONTROL OF BOTRYTIS BLIGHT OF REDWOOD SEEDLINGS

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Botrytis blight (*Botrytis cinerea* (Fr.) Pers.) of redwood seedlings (*Sequoia sempervirens* (D. Don) Endl.) can be controlled by periodic fungicide applications. Both chlorothalonil (Daconil 2787, Bravo) and dicloran (Botran) are effective when applied as protectants (1). Irrigation sprinkler systems are an efficient method of applying fungicides in the control of several diseases. Chlorothalonil has been used in this manner for control of early blight of potato and late blight of carrots. Sprinkler irrigation systems are presently being used to apply fertilizer and fungicides to conifer seedlings in container nurseries.

The purpose of this study was to compare and evaluate the effectiveness of a sprinkler irrigation system and the conventional hand sprayer in the application of fungicides to redwood seedlings.

Materials and Methods

Seeds were planted in March in a peat-vermiculite planting mixture in 1- by 4-inch Leach containers. Fertilizer was applied with irrigation through the overhead sprinklers. The

plants were maintained in an unheated plastic greenhouse. Temperature during the experiment varied from 7° C to 30° C. The trial was conducted at Korb, California, where the climate is conducive to the disease because of fog and high humidity. Each treatment consisted of five replications of 200 plants. The replications were arranged in complete randomized blocks. The seedlings were sorted for uniformity at the time of the first fungicide application of August 7.

Fungicides were applied to run-off using a Hudson garden sprayer operated at 20 to 30 pounds per square inch or through the sprinkler irrigation system. A total of five applications were made at 21-day intervals commencing August 7. The sprays were applied at the rate of 580 milliliters per square meter using 1.35 grams of active ingredient per liter of water. This amounted to 0.78 gram of fungicide per square meter.

The sprinkler applications were made using 114 grams of 75 percent fungicide in 9.5 liters of water injected into the nursery irrigation system using a Robbins-Meyers electric injector at a proportion of 1 part to 200 parts. The amount of active ingredient applied per square meter was 0.23 gram and it was applied in 4.23 liters of water per square meter. Three min-

utes were required for this application. Botran 75W (75 percent dicloran) and Daconil 2787 (75 percent chlorothalonil) were the wettable power formulations used. Disease evaluations were made on November 29. The results are presented in table 1.

The seedlings were inoculated on July 27 by atomizing each 200 plants with 10 milliliters of a suspension of 1.7×10^6 conidia per milliliter of water. Conidia were produced on potato-dextrose-agar medium.

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Table 1.—The effect of fungicides on botrytis blight of redwood seedlings

Treatment	Application	Average no. of infected plants
Daconil2787	sprayed	4
Daconi12787	sprinkler	18
Control	—	16
Botran	sprayed	12
Botran	sprinkler	59
Control	—	38

In this trial, the amount of fungicide applied by sprayer was 3.4 times the amount applied through the sprinkler system, and the concentration of fungicide in the sprays that were applied to run-off was greater than that in the sprinkler-applied suspension that was applied in excess. The

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excess fungicide was wasted since it was not retained on the plants. The amount of fungicide retained on the plants from the sprinkler application was only 0.031 gram per square meter. The failure of the sprinkler applications to control the disease

was the result of insufficient fungicide deposit. The concentration of the fungicide suspension for sprinkler application necessary to achieve the same deposit as the spray applications would be 19 times that used.

Literature Cited

1. McCain, Arthur H., and Paul C. Smith. 1978. Evaluation of fungicides for control of botrytis blight of container grown redwood seedlings, *Tree Planters' Notes* 29(4):12-13.

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