

Fungicide Trial
Phytophthora blight of Poinsettia
Trial date 12/19-28/00

Poinsettia plants (Euphorbia pulcherrima ‘Red Satin’) used for this test were purchased from the Environmental Horticultural Sciences Plant Shop at California Polytechnic State University, San Luis Obispo. Each plant was in a 4-inch pot and consisted of one to four stems. The plants were sold for the Christmas season and had several red bracts and flowers on each stem. Two plants were used for each treatment.

Several fungicides tested were for their effectiveness. Fosphite (JH Biotech) was used at a rate of 2 quarts in 100 gallons of water and applied as a foliar spray (spray till wet) or as a drench (1 gallon per square yard). Chipco Alliete WDG (Rhone Poulenc) was used at a rate of 4 pounds per 100 gallons of water applied as a foliar spray (spray till wet). Subdue Maxx (Novartis) was used at a rate of 1 fluid ounce in 100 gallons of water and applied as a drench at 1 pint solution per square foot. Control plants were untreated.

The fungus used for the trial, Phytophthora parasitica, was isolated previously from blighted poinsettia grown at Cal Poly. The fungus was grown on 10% vegetable juice agar for five days at 25 C. Culture dishes were flooded with sterile deionized water and incubated at room temperature for one hour before the zoospore suspensions from several dishes were collected. The zoospore concentration was determined using a hemacytometer and the suspension was adjusted to 10,000 zoospores per milliliter.

Poinsettia plants were spray inoculated till wet with the zoospore suspension or with sterile deionized water 24 hours after being treated with fungicides. All plants were placed in plastic bags containing water to maintain the moisture on the plants. The plants were removed from the bags after 23 hours and kept in a section of the greenhouses of the Biological Sciences Department at Cal Poly.

Eight days after inoculation, the plants were visually evaluated. The following scale was used:

0	No spots
1	1-3 spots present on leaves but not obvious
2	1-3 spots obviously present on bracts
3	4-12 spots present on bracts and leaves
4	Spots presents on bracts, leaves, flowers and stems
5	Plant totally blighted

Reisolation of the pathogen was attempted from all water spray inoculated plants and from representative necrotic spots from the fungicide treated, zoospore inoculated plants. Necrotic spots with some healthy tissue were immersed for 1 minute in 10% bleach, blotted dry, and placed in a water agar dish. Fungal colonies growing out from the tissues were identified several days after plating.

Results:

Water spray inoculated control plants has a few spots, but reisolations showed no Phytophthora was present in any spots. Similarly, necrotic spots on the fungicide treated, water spray inoculated plants did not produce any Phytophthora in reisolation attempts. The fungus Botrytis sp. grew from the above tissues.

Evaluation of the zoospore inoculated plants showed that the control plants averaged a rating of 4.0, having numerous necrotic spots on bracts, leaves, flowers and stem. The plants treated with Fosphite as a drench rated 4.0 and the Subdue Maxx 3.5. The plants treated with Fosphite as a spray and Aliette both rated 1.0. However, Phytophthora was reisolated from the Aliette treated plants but not from the Fosphite treated plants. In all negative reisolation attempts, almost all fungal growth was of Botrytis sp. Other negative tissue samples did not produce any fungal growth.

Table 1. Disease ratings of Poinsettia plants inoculated with a zoospore suspension of Phytophthora parasitica a day after being treated with fungicides. Ratings were made 8 days after inoculation and ratings of two plants for each treatment were averaged. Reisolation of the pathogen was also carried out (+ = Phytophthora, - = no Phytophthora).

	<u>Zoospore Inoculated</u>		<u>Water Sprayed</u>	
	<u>Rated</u>	<u>Reisolated</u>	<u>Rated</u>	<u>Reisolated</u>
No Fungicide	4.0	+	0.5	-
Fosphite, spray	1.0	-	0.0	-
Fosphite, drench	4.0	+	0.5	
Aliette	1.0	+	0.5	-
Subdue Maxx	3.5	+	0.5	-

0	No spots
1	1-3 spots present on leaves but not obvious
2	1-3 spots obviously present on bracts
3	4-12 spots present on bracts and leaves
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Conclusions:

1. The fungicides applied as foliar sprays, Fosphite and Aliette, were most effective in preventing the disease. Reisolation of the fungus indicated the Fosphite completely prevented the establishment of the fungus. However, a few spots caused by the fungus Botrytis sp. did develop on the Fosphite treated plants
2. Under the conditions of this test, Fosphite applied as a drench and Subdue Maxx were not effective.
3. None of the fungicides produced any adverse reactions on the plants.

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