

**Efficacy of registered and unregistered fungicides for control of Ramorum blight on camellia, 2008.**

This study was conducted as part of the IR-4 Ornamental Horticulture Program to evaluate fungicides for managing foliar diseases of ornamental plants caused by *Phytophthora ramorum*. Because *P. ramorum* is a pathogen under federal quarantine, experiments had to be conducted in containment on detached leaves. Camellia plants grown in 3.8-L plastic pots were obtained in late Jun and maintained outdoors in shade conditions with daily hand watering. Four single-plant replications were arranged in a randomized block design. Treatments consisted of a fungicide application on 21 Aug of either a spray or drench. Foliar applications were applied to run-off using a hand-pump sprayer. Drenches were applied until soil was saturated. Seven days after a fungicide application, three leaves from each plant were removed for detached leaf inoculations under quarantine containment conditions. Leaves were placed in plastic containers with 500 ml moistened vermiculite. Separate containers were used for each chemical treatment. Each leaf was needle-wounded once on the abaxial side to the right of the midvein just prior to inoculation with *P. ramorum* strain Pr-05-046 (A2 mating type isolated in OR). A 20- $\mu$ l drop of inoculum (3,500 sporangia/ml) was applied to each wound site. Non-inoculated controls received an equivalent drop of sterile distilled water. After inoculation, leaves were misted and containers were placed in an incubator at 20°C with a 14-hour light cycle for ten days. Disease severity was determined by evaluating lesion area from digital images using ASSESS software (APS, St. Paul, MN) on day seven. Lesion area was subjected to analysis of variance (SAS 9.1, SAS Institute, Cary, NC). All experiments were conducted in a containment growth chamber following standard operating procedures approved by USDA APHIS.

Chemical treatments had a significant effect on lesion area observed. However, not all chemicals had the same efficacy in reducing lesion expansion. Aliette, Captan, V-10161, NOA 446510, Fenstar (low rate only), Disarm (low rate only) and Stature DM were not significantly different from the untreated, inoculated controls. For Fenstar and Disarm, significant differences were observed among high and low rates. Disarm (high rate), Segway and Subdue MAXX were most effective in reducing disease severity. All chemicals were effectively fungistatic, not fungicidal, after confirmation of the pathogen's viability by isolation and subsequent culture of the pathogen from wound sites on symptomless leaves. No phytotoxicity was observed for any treatment. The non-inoculated control showed no lesions.

Treatment and rate/L	Application	Lesion area (cm <sup>2</sup> )*
NOA 446510 (mandipropamid) 0.31 ml .....	spray	5.8abc
NOA 446510 (mandipropamid) 0.62 ml .....	spray	6.2abc
Disarm 480SC (fluoxastrobin) 0.31 ml.....	drench	6.6abc
Disarm 480SC (fluoxastrobin) 0.62 ml .....	drench	1.1ed
Segway (cyazofamid) 0.23 g .....	spray	0.8e
Segway (cyazofamid) 0.47 g .....	spray	0.7e
V-10161 (fluopicolide) 0.08 ml .....	drench	5.4bc
V-10161 (fluopicolide) 0.16 ml .....	drench	5.6bc
Fenstar (fenamidone) 1.09 ml .....	drench	6.4abc
Fenstar (fenamidone) 2.18 ml .....	drench	4.5cd
Aliette (fosetyl Al) 0.71 g .....	spray	9.1a
Captan 2.4 g .....	spray	7.1abc
Subdue MAXX (mefenoxam) 0.16 ml .....	spray	0.5e
Stature DM (dimethomorph) 0.48 ml .....	spray	6.6abc
Untreated, inoculated control .....	-	8.0ab

\*Means followed by the same letter are not significantly different at  $P=0.05$ , according to a Fisher's protected least significance difference test.