

Evaluation of registered and non-registered fungicides drenches for the control of Phytophthora root rot on calibrachoa in the greenhouse, 2016.

Inoculum was prepared by growing *Phytophthora drechsleri* on V8 agar for four weeks. Flasks filled with two parts millet and one part water were sterilized. Five, 1.5 in. plugs of the infested agar were placed into each flask. The infested millet was allowed to grow for three weeks before inoculation. Calibrachoa ‘Pomegranate Punch’ seedlings were purchased from a local greenhouse and transplanted into 4 in. pots containing a soilless media (Suremix MI Grower Products, Inc., Galesburg, MI) on 22 Nov. Plants were overhead watered by hand as needed and fertilized three times weekly with 200 ppm of Peters 20-20-20 water soluble fertilizer (ICL Specialty Fertilizers, Dublin, OH). Greenhouse temperatures averaged 73°F during the day and 63°F at night. Six plants per treatment were arranged in a completely randomized design. Plants were inoculated by burying 0.1 oz of infested millet 0.5 in. away from the base of the stem on 23 Nov. Approximately four hours after inoculation, fungicides were applied as a drench (3 fl oz/pot) in sufficient volume to displace 10% of the water in the pots. On 30 Nov, the treatments were reapplied at the same rates and volumes described in the table below. A plant health rating (1 to 5; 1=healthy, 2=chlorosis/stunting, 3=minor wilting, 4=moderate/severe wilting, 5=plant death) and plant death (%) were assessed on 30 Nov and 5 and 12 Dec. Data were analyzed using SAS PROC GLM and statistical differences were compared using the Fisher’s Protected Least Significant Differences test ($P=0.05$).

Disease pressure was severe in this trial with 83.3% of the untreated inoculated control plants dead by the 5 Dec. Newly registered fungicides Mural 45WG, Orkestra SC, and Empress Intrinsic SC, and the non-registered fungicide pyraziflumid were not efficacious against Phytophthora root rot in this study and resulted in disease severity similar to the untreated inoculated control by the final rating. The non-registered phosphorous acid product Inosco F was moderately effective, and although treated plants displayed symptoms of stunting and chlorosis, the treatment statistically reduced plant death compared to the untreated inoculated control on the final two ratings. Industry standard Segovis SC was the only treatment to completely prevent symptoms of Phytophthora root rot on all treated plants for all rating dates. Phytotoxicity was not observed on any of the treated plants in this study.

Treatment and rate/100 gal	Disease severity*			Plant death (%)		
	30 Nov	5 Dec	12 Dec	30 Nov	5 Dec	12 Dec
Untreated uninoculated	1.0 a**	1.0 a	1.0 a	0.0	0.0 a	0.0 a
Untreated inoculated	3.5 c	4.3 c	4.3 b	33.3	83.3 c	83.3 b
Mural 45WG 3.0 oz	2.2 abc	2.8 ab	4.3 b	33.3	33.3 ab	83.3 b
Orkestra SC 10.0 fl oz	2.8 bc	3.7 bc	4.3 b	33.3	66.7 bc	83.3 b
Empress Intrinsic 23.8SC 6 fl oz	2.2 abc	4.3 c	4.3 b	16.7	83.3 c	83.3 b
Segovis 1.67SC 2.4 fl oz	1.0 a	1.0 a	1.0 a	0.0	0.0 a	0.0 a
pyraziflumid SC 5.08 fl oz	2.7 abc	4.0 c	5.0 b	16.7	66.7 bc	100.0 b
Inosco 4L (A14658C) 24.0 fl oz	1.7 ab	2.0 ab	2.0 a	0.0	16.7 a	16.7 a

*Disease severity was rated on a scale of 1 to 5; 1=healthy, 2=chlorosis/stunting, 3=minor wilting, 4=moderate/severe wilting, 5=plant death.

**Column means with a letter in common or no letter are not significantly different (Fisher’s LSD; $P\leq 0.05$).