

PROPOSAL TO THE OREGON DEPARTMENT OF AGRICULTURE
Nursery Research Grant Program 2026

Title: Detection of flutriafol in boxwood leaves when drenched for boxwood blight control

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Background:

Boxwood blight (BWB) (*Calonectria pseudonaviculata*) has increased nursery production costs and changed marketing strategies since it was first found in 2011. Cultural and chemical practices manage boxwood blight, but surveys still find low levels of disease in parts of the canopy that are hard to cover with fungicide sprays. Drenching the soil or media with the fungicide flutriafol was found to be an effective alternative to canopy sprays for BWB management (Sacher and Pscheidt 2025). Utilizing multiple inoculations, drench applied TopGuard (flutriafol; FRAC 3) resulted in less disease for up to 20 weeks post fungicide application than non-drenched plants. It is not known if disease control is due to residual fungicide activity in the leaves or some other factor. Drench applications of fungicides could be a cost-effective way to protect plants for extended periods as they travel from wholesale nursery to retail nursery to planting out in a landscape.

Project Objectives and Outcomes:

Our goal is to quantify how much flutriafol is translocated into boxwood leaves over time after a single drench of potted plants.

The specific deliverable is a graph of flutriafol concentration in boxwood leaves over time. The graph will be useful to the fungicide manufacturer to support inclusion of boxwood on the fungicide label. (Note: flutriafol is marketed as Rayora to the nursery industry.)

Methods:

Quantification of flutriafol in leaves will be done on small *Buxus sempervirens* ‘common’ plants grown in a greenhouse on the OSU campus. Drench treatments will consist of flutriafol (TopGuard/Rayora at 14 fl oz/100 gal water), or a water no-fungicide control. Treatments will be arranged in a randomized complete block design with 6 replications. Plants will be placed on saucers to catch any solution run-through. Leaves will be collected just prior to the drench application and at several times points after drenching including at 48 hr, 1 week, 2 wk, 3 wk, 4 wk, 8 wk, 12 wk, 16 wk, 20 wk, 24 wk, 28 wk, 32 wk, and 36 weeks. Leaves are weighed, frozen and then homogenized via bead beating when suspended in methanol. Homogenized samples will then be analyzed for flutriafol content via mass spectrometry/liquid chromatography (LC/MS) at the OSU Mass Spectrometry Center.

Although this experiment is underway, funding sources have run dry. We have the greenhouse space and manpower to make the final leaf collections but are looking for the funds to run the samples through the Mass Spec Center.

Timeline:

Winter 2025-2026 – Make final leaf collections. Process frozen samples. Send them to the OSU Mass Spec Center
Spring 2026 – Write up results.

Budget:

The price quoted from the OSU Mass Spece Center (dated July 2025) was \$24 per sample if we prepare the sample or \$34 per sample if they prep the samples.

Supplies	(168 samples at \$24/sample)	\$ 4,032
Publication		\$ 1,000
Total		<u>\$ 5,032</u>

Reference:

Sacher, G., and Pscheidt, J. W. 2025. Detached leaf assays reveal long-term efficacy of the systemic fungicide flutriafol against boxwood blight. Plant Dis. In press.