

How to use the Boxwood Blight App and Push Notifications

Len Coop
Oregon IPM Center at Oregon State University

The boxwood blight model app is a tool developed from research on rates of infection of the causal organism of boxwood blight, *Calonectria pseudoveniculata*. The goal of this model is to help you determine when to conduct close inspections for disease, and when fungicide applications may be needed for control of boxwood blight. This document describes how to use the model app (https://uspest.org/risk/boxwood_app) and how to sign up for email “push” notifications (<https://uspest.org/push>).

How to use the Boxwood Blight App

This app is similar to other plant disease infection risk model apps at uspest.org. It integrates temperature, relative humidity, and wind speed to predict whether environmental conditions are conducive to infection, assuming susceptible hosts and the presence of inoculum of the fungus. Given that boxwood cultivars have a wide range in susceptibility to the disease, and that inoculum presence may vary from zero to extreme levels, consider that model predictions should always be interpreted relative to your local situation. These factors also include fungicide efficacy and residual activity, boxwood growing conditions including how dense the foliage is, shade, microclimate, how much if any irrigation is applied, and other factors such as the value of the plantings, and history of infections.

The boxwood blight app is located at https://uspest.org/risk/boxwood_app. The app is a web page designed to work both on mobile devices and on full screen computers. The app has four tabs along the top, “Intro”, “Inputs”, “Graph”, and “Table”(Fig. 1).

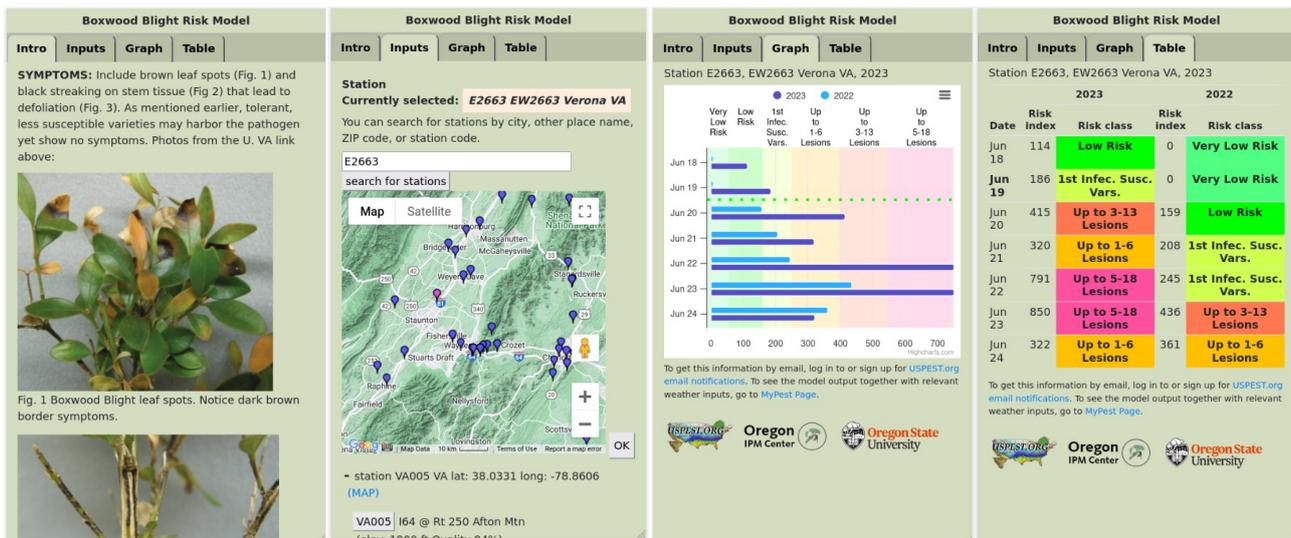


Fig. 1. Boxwood Blight modeling app – four tabs divide the app. First time users should read the entire “Intro” section. The primary purpose of the “Inputs” tab is finding a weather station nearest to your location. It also allows you to set an earlier start date (for retrospective analysis), and the time span for outputs, either 7, 14, or 30 days. The two tabs for viewing model outputs are “Graph” and “Table” which present the same results in two different formats. Both display the selected (normally current) year predictions vs. the previous year for comparison.

Inputs The single major input is selection of a weather station that is most appropriate for your location. Enter your nearest town, ZIP code, or weather station code and click the “Search” button. A list of locations should appear following “+” signs, which expand to a list of stations. Click the “Map” link to display the stations on a Google map. Consider proximity, elevation, and data quality

in your selection. Generally, the data quality score should be 80% or better, but sometimes stations with a lower score can be suitable as well. We generally recommend running the model for at least two nearby weather stations in any case.

Outputs Both the “Graph” and “Table” outputs report the same model predictions in different ways. The Graph view conveys less information visually, but reveals more details if you are able to interact with it using a mouse (or touch if using a mobile device), such as the precise risk index value and the risk category, both of which are also indicated on the lower and upper axis. One option in Graph mode is to click on the prior year in the legend to turn that off. Other options include printing and downloading the image to your computer or device.

The risk category is conservative, as it is based upon highly susceptible English boxwood or *Buxus sempervirens* "Suffruticosa". You may want to use the model to predict when symptoms might be expected, usually 7-10 days after two or more days of high infection risk are indicated. As this is a relative risk rating, no management recommendations are provided with the model predictions. Your state extension service may have web pages that will provide such information, along with cultivar susceptibility rankings, and best management practices. One excellent source for such information is the Boxwood Blight Insight Group website, at <https://www.boxwoodhealth.org/>.

How to use Boxwood Blight Push Notifications

The same boxwood blight modeling app is also available to provide free (and Ad-free) email “Push” notifications as a convenient time saver. This feature allows the user to set up their weather stations and a schedule of months and days of the week to receive model predictions directly to their email inbox. The service was not designed to send notifications for a user-prescribed risk level or “trigger”, however.

There is a 13 minute tutorial at https://www.youtube.com/watch?v=-Z_w7InkMLs to help walk you through the steps, or follow this guide, referring to Fig. 2.

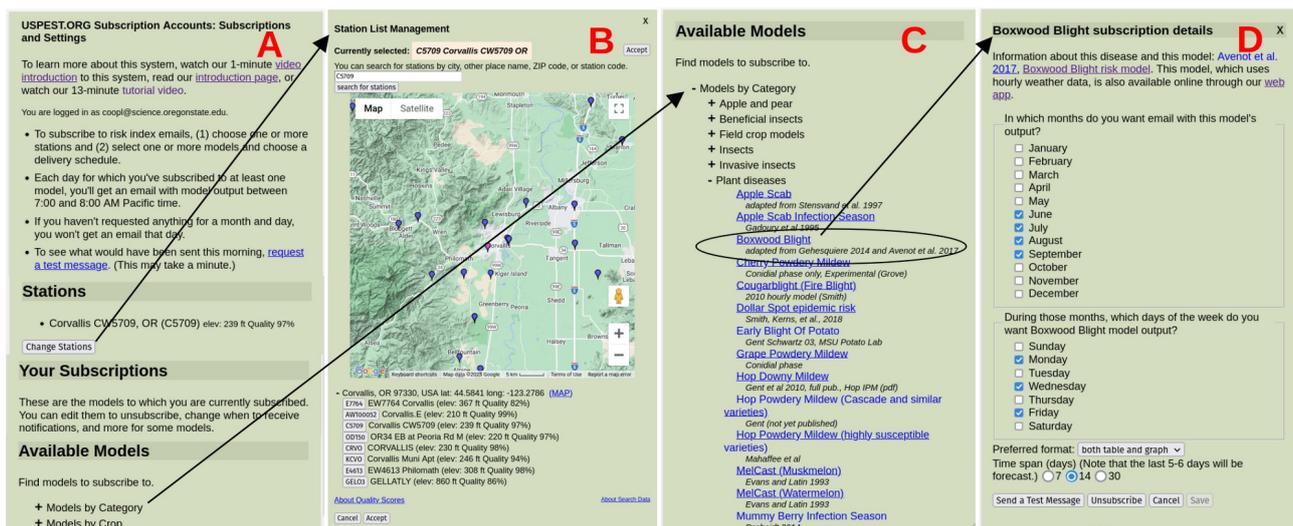


Fig. 2. Subscribing to boxwood blight model email “Push” notifications. This is similar to using the model itself for selection of weather stations (B). Select your schedule as shown (C and D).

1) First, create an account with your email and password at <https://uspest.org/push>

2) Next, log into your account to customize Push notifications in two sections:

o In the Stations section, click “Change Stations” (Fig. 2A) to select your weather stations:

- Click “Add a station to list” and enter your location name, ZIP code, or station code to show available weather stations nearby (Fig. 2B)
- If you are not sure where the listed stations are located, click the Map link and click on the nearest pin or button for the station with good data quality (80% or higher), and
- Repeat for the desired number of stations, and
- Click “Accept” to save the selected station(s). Save your final list.
- o In the Subscription section, select your models and schedule:
 - Under “Available Models, (Figs. 2A and 2C) expand “Models by Category” (click on “+”), then “Plant diseases”, and then on “Boxwood Blight”, which opens the popup in Fig. 2D
 - Consider what schedule would be best for you to receive model outputs, starting with the months when you like to receive infection risk forecast results, and
 - Select the day(s) of the week when you like to receive notifications
 - Choose your preferred report format – table, graph, or both
 - Choose your preferred time span for the model run – 7, 14, or 30 days (7 days recommended)
 - Send a test message (this only works if you include today’s month and day of the week) to see what the reports will look like in your email inbox
 - Save the selections. Repeat for other models if needed. Close page or logout when finished!

That should be all there is to it! If you would like to know more about the technical details used to build the model, refer to this web page:

https://uspest.org/wea/Boxwood_blight_risk_model_summaryV3.pdf

Acknowledgments

- This app was funded in part by the US Farm Bill FY17 and sponsored by the USDA APHIS PPQ project, "Enhancing boxwood blight mitigation through innovation, integration, and education", with collaborators from VT, Cornell, NCSU, OSU, USDA ARS, and the Boxwood Blight Insight Group.

- This work was funded by grants from the USDA NIFA Western Region IPM Center, and the Oregon Agricultural Experiment Station.

- This app was funded in part by the USDA National Institute of Food and Agriculture, Crop Protection, and Pest Management, Extension Implementation Program (USDA-NIFA-CPPM-EIP).

- Dan Upper provided programming for the project.

- Last Updated June 2023.

