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# FUNGICIDES FOR BOXWOOD BLIGHT MANAGEMENT IN CONNECTICUT

## Version 1.0**

**These are subject to revision based on the availability of new information (revised March 2019).

Fungicides for boxwood blight management should be used in conjunction with cultural controls and disease scouting. Disease Risk models are currently under development but not yet practical as a tool for predicting when to spray in relation to infection periods. However, infection of boxwood by the *Calonectria pseudonaviculata* pathogen typically occurs between 50 and 85 F and requires extended periods of leaf wetness to initiate spore production, allow spread, and for spore germination and infection. The length of time that leaves need to remain wet for infection to occur depends on the temperature, but typically eight or more hours of continuous wet conditions are required. Infection efficiency is higher and requirements for leaf wetness lower for very susceptible cultivars and also for newly expanded leaves in comparison to mature leaves. We have demonstrated large differences in susceptibility between cultivars and research is continuing in Connecticut and North Carolina. Current information about boxwood susceptibility is presented at https://portal.ct.gov/caes.

Combinations of systemic and protectant fungicides in different FRAC classes and with different modes of action are desirable both for increased efficacy and for fungicide resistance management. Our research has demonstrated that weather conditions are paramount in the development of boxwood blight epidemics. Plants with very low levels of disease, either in the landscape or in nurseries, can remain undetected for long periods of time until extended warm and wet conditions increase the incidence and severity of disease and initiate an epidemic as the pathogen can spread quickly from plant to plant as disease levels build. While fungicides can impact disease, excellent coverage is important and pretreatment with fungicides is always more effective than trying to control disease that is already underway. However, the conditions of extended leaf wetness and high humidity that drive disease can often make effective pre-application of fungicides difficult. We have observed that propiconazole, benzovindiflupyr and fluxapyroxad have some curative activity within 48 hours after infection and a number of fungicides in FRAC group 3 inhibit sporulation from lesions that develop from infections. The combination of protectant with systemic fungicides as well as adding in curative and antisporulant activity when conditions would otherwise reduce efficacy can all work together to

protect boxwood from blight. Managing to prevent disease using fungicides as a part of best management practices is our best approach.

As boxwood blight is a relatively new disease and many fungicide labels for ornamentals do not list all ornamental plants, boxwood and the blight pathogen *Calonectria pseudonaviculata* or *Cylindrocladium pseudonaviculatum* are often not specified on fungicide labels. Rather, many labels specify broad nursery or landscape applications and advise application to a small number of test plants to avoid potential problems with phytotoxicity. The fungicides listed below in Table 1. are available for use on boxwood in Connecticut and have activity against the boxwood blight pathogen. This list is intended to demonstrate the range of active ingredients and products available and is not intended to be exhaustive or complete. Always read the entire pesticide label and check the accuracy of the presented information. Labels, use rates and registration status can and do change frequently and interpretation of allowable uses may be different in different states. The efficacies of the individual products have not always been evaluated on boxwood in Connecticut. The listed commercial products do not imply endorsement by CAES or bias against those not mentioned. FRAC group = Fungicide Resistance Action Committee group.

Version 1.0 (March 2019)

**References:**


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**Table 1. Fungicides for use against boxwood blight in Connecticut.**

| Fungicide a.i. | FRAC group | Product | Rate | Notes |
|---|---|---|---|---|
| mancozeb | M3 | Fore 80 WP | 1.5 lb/100 gal water | Landscape and nursery. Use with a spreader sticker. 24-hr reentry. |
| mancozeb | M3 | Protect DF | 1-2 lb/100 gal water | Landscape and nursery. Use with a spreader sticker. 24-hr reentry |
| chlorothalonil | M5 | Daconil Weather Stik | 1.4 pints/100 gal water | Landscape and nursery. Do not use with a surfactant. 12-hr reentry. Warning: eye damage. |
| thiophanate-methyl | 1 | Cleary's 3336 | 12 to 16 oz/100 gal | Use with another FRAC group mixing partner. 12-hr reentry. |
| propiconazole | 3 | Banner MAXX | 6 to 8 oz/100 gal water | landscape and other sites. 24-hr reentry. |
| propiconazole | 3 | ProConZ | 5 to 12 oz/100 gal water | landscape and other sites. 24-hr reentry. |
| metconazole | 3 | Tourney 50 WDG | 1 to 4 oz/100 gal water | Landscape and nursery. |
| tebuconazole | 3 | Torque | 4 to 16 oz/100 gal water | Landscape and container ornamentals. 12-hr reentry. |
| tebuconazole | 3 | Tebuconazole 3.6F | 4-10 oz in 100 gal water | Landscape and nursery. not for homeowner use. Max 4 app/yr. 12-hr reentry. |
| myclobutanil | 3 | Eagle 20 EW | 6 to 12 fl oz/100 gal | Landscape and many other sites. 24-hr reentry. |
| trifloxystrobin | 11 | Compass | 1 to 4 oz/100 gal water | Do not use organosilicates. Nurseries, greenhouses, hoop houses. 12-hr reentry. |
| pyraclostrobin | 11 | Insignia | 4 to 16 oz/100 gal water. | Landscape and nursery. Do not use with organosilicate-based adjuvants. 12-hr reentry. |

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| fludioxonil | 12 | Emblem | 2 to 4 fl oz/100 gal water | Landscape and nursery. Do not use with oils or surfactants. 12-hr reentry. |
| fludioxonil | 12 | Medallion WDG | 1 to 4 oz/100 gal water | Use with oils or adjuvants may damage plant. Can be used in the landscape and many other sites. 12-hr reentry. |
| thiophanate-methyl plus chlorothalonil | 1 + M5 | Spectro 90 WDG | 1 to 2 lb/100 gal water | Landscape and nursery. Do not use with a surfactant. 12-hr reentry. Warning about eye damage. |
| trifloxystrobin plus triadimefon | 3 + 11 | Strike Plus 50 WDG | 3 to 9 oz/100 gal water | For use in nurseries and greenhouses only. 12-hr reentry. |
| azoxystrobin plus benzovindiflupyr | 7 + 11 | Mural | 4 to 7 oz/100 gal water | Nursery and commercial landscapes. Do not let drift contact apple, crabapple, or privet. Azoxystrobin is ineffective. Benzovindiflupyr some curative activity. 12-hr reentry. |
| pyraclostrobin plus fluxapyroxad | 7 + 11 | Orkestra | 8 fl oz/100 gal water | Landscape and nursery. Fluxapyroxad some curative activity. 12-hr reentry. |
| boscalid plus pyraclostrobin | 7 + 11 | Pageant | 8 to 12 oz/100 gal water | Landscape and nursery. Do not use more than 2 consecutive applications. Boscalid little activity. 12-hr reentry. |
| cyprodinil plus fludioxonil | 9 + 12 | Palladium | 2 to 4 oz/100 gal water | Nursery and commercial not residential landscapes. Avoid excessive runoff to small plants, which may result in stunting and/or chlorosis. 12-hr reentry. |