086

An investigation on nursery growers' perception of boxwood blight disease and assessment of efficacy of its management using chemical and innovative alternative approaches.

Boxwood is one of the most popular ornamental shrubs in the United States. Boxwood blight, caused by *Calonectria pseudonaviculata (Cps)*, is an emerging threat to boxwood production that has spread across at least 30 states. Understanding how tools and practices may spread the disease in nurseries, and what chemical or alternative measures help to alleviate or prevent disease are crucial for disease management. A survey was conducted among a panel of 29 nursery producers who represented a significant portion of boxwood producers nationally. A modified Delphi technique was adapted and a response rate of 62% was obtained in the first round of this study. Nursery growers in the study rated boxwood blight as the third most problematic disease, with the potential to becoming the number one problematic disease in the future. Boxwood transplants were rated as the main source of boxwood blight outbreak in their nurseries followed by cutting tools. Cultural control methods, inspection and quarantine of incoming plant material, scouting, and sanitization were the most important practices that can limit or prevent plant diseases during boxwood production. A set of 5 different fungicides and an antitranspirant were tested for their ability to suppress disease severity, and efficacy of UV-C irradiation to render the propagules (conidia) of the pathogen inactive was assessed. A total of 24 different combinations of preventive and curative treatments of fungicides and antitranspirant were applied to a susceptible boxwood cultivar and disease development was assessed and compared for each treatment. Plants treated with curative application of the low rate of Postiva (14 fl oz) had the lowest disease severity. The lowest disease progress was observed for preventive and curative applications of the low rate of Postiva (14 fl oz), the high rate of Postiva (24 fl oz) *alt* Vapor Gard, Daconil Weatherstik *alt* KleenGrow, and Daconil Weatherstik *alt* Vapor Gard. Conidia of *Cps* were produced in laboratory conditions, suspended in phosphate buffer saline (pH- 7.5), had optical properties assessed, and time of treatment for UV-C dose were calculated. The conidia were then treated by using a custom-built collimated beam UV-C irradiation system. The samples were treated with doses of 0, 12, 24, 48 and 60 mJ/cm^2, and surviving population were enumerated. A log-linear model was fitted and predicted a one log reduction at 47 mJ/cm^2 and two log reduction at 60 mJ/cm^2 ($\pm$0.04 log10 CFU/mL). The findings of this study are anticipated to be useful in confirming the critical control points in boxwood production nurseries to limit the entry and spread of the pathogen, and suppressing the disease spread if infection has already started. Results of the UV study could be utilized in various application studies such as different irradiation approaches to suppress boxwood blight in production nurseries.