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Chemical Control of Powdery Mildew of Bigleaf Hydrangea

Hydrangea.macrophylla, or bigleaf hydrangea, is a popular ornamental shrub loved worldwide. They are prized for their foliage and large, colorful inflorescences. Their economic value in the United States as of 2019 was over $155 million dollars. Diseases that negatively impact health and appearance of bigleaf hydrangea also cause detrimental impacts to their salability. Powdery mildew is a widespread disease that impacts many different species, including bigleaf hydrangea. Golovinomyces.orontii is the disease-causing agent of powdery mildew on bigleaf hydrangea. Fungicides provide a way to control diseases such as powdery mildew on ornamental crop plants such as bigleaf hydrangea. Investigating not only new fungicides but at what application rate and interval they can be optimally used at is crucial as well. The purpose of this study was to test the efficacy of application rates and intervals on the control of powdery mildew of bigleaf hydrangea with the fungicide pydiflumtofen + difenoconazole (Postiva). Azoxystrobin + benzovindiflupyr (Mural) was used as a known control for powdery mildew. Postiva was applied at rates of 1.1, 1.6 or 2.2 ml per L^{-1} and Mural at 0.5 g per L^{-1} were sprayed to runoff on a 2-, 4-, or 6-week interval. Four separate trials were conducted in 2022 and 2023, with two taking place in both shade house and greenhouse conditions, respectively. SAS 9.4 was used to analyze the season long area under the disease progress curve (AUDPC), area under the defoliation progress curve (AUDFC), disease severity, defoliation, and growth increase using one-way analysis of variance (ANOVA) and factorial two-way ANOVA. All application rates and application intervals of Postiva provided similar control of powdery mildew. These results indicate that Postiva can be used at a low rate at a longer application interval, which will be the most cost-effective approach for growers controlling powdery mildew on bigleaf hydrangea.