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Inoculation Methods for Powdery Mildew of *Hydrangea macrophylla.*

Bigleaf hydrangea, *Hydrangea macrophylla*, is a popular ornamental shrub that is loved worldwide for its large, colorful inflorescences. Bigleaf hydrangea is the second-most valuable shrub in the United States, with sales in 2019 topping $155 million. However, diseases impact the health, appearance and ultimately the salability of bigleaf hydrangea. One such disease is powdery mildew, caused by *Golovinomyces orontii*. Powdery mildew is a biotrophic obligate, which means that it will only grow on a host, making it particularly hard to investigate. The current method of inoculating plants involves tapping infected leaves against healthy ones. However, this approach is inconsistent, highlighting the need for more reliable alternatives. The purpose of this study was to compare two inoculation methods for the initiation of powdery mildew disease on bigleaf hydrangea. An inoculation box and a spray inoculation method were compared using 'Endless Summer' bigleaf hydrangea plants in 1-gallon containers. For the box inoculation, 6 infected leaves per plant were tapped above a 48-micron mesh and gently dusted through to land on the plant surface. For the spray inoculation, 6 infected leaves per plant were combined into a spray by rinsing the leaves with deionized water, adding Tween 20 to aid with even dispersion, and applied to the plant using a spray bottle. Powdery mildew was then evaluated on a scale of 0-100% and the area under disease progress curve (AUDPC) was calculated. The final disease severity of hydrangea inoculated via the box and spray method after 4 weeks of observation were 10.0 and 20.0%, respectively. These results provide valuable information on consistency among inoculation methods and serve as a foundation for further understanding host-pathogen interactions of powdery mildew of bigleaf hydrangea.