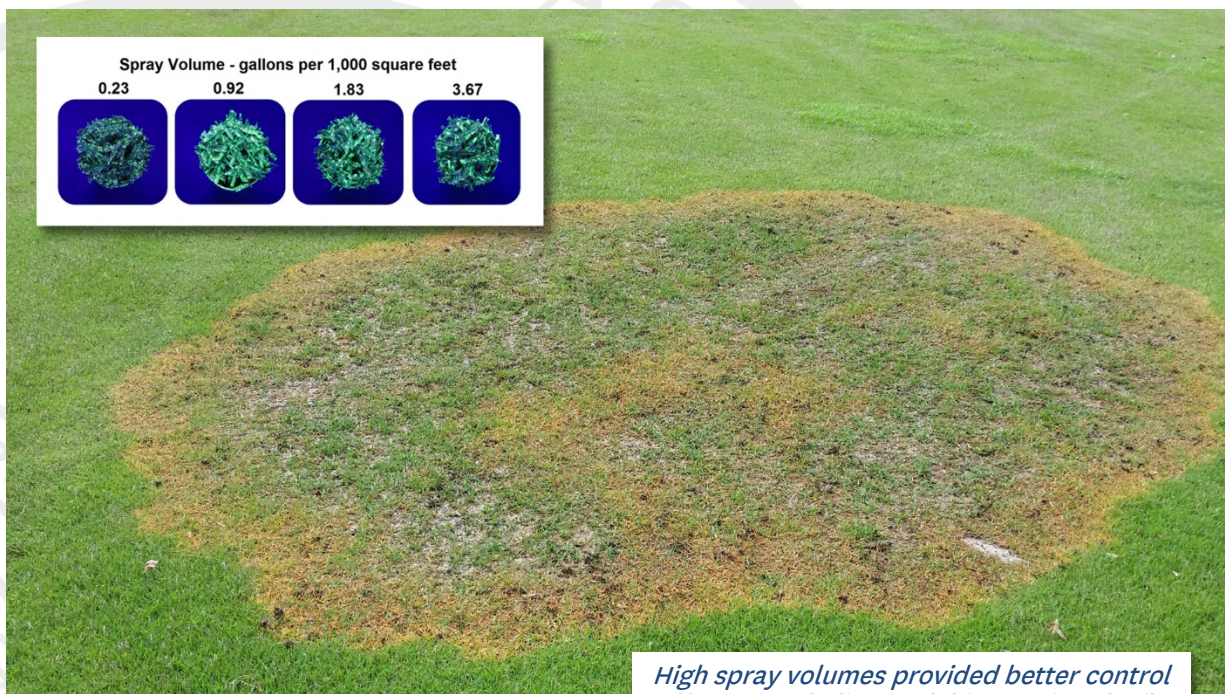




Nozzle Type, Droplet Size And Water Volume Can Make A Difference



*High spray volumes provided better control of large patch disease (*Rhizoctonia solani*) on zoysiagrass fairways.*

Fungicide applications are crucial to preventing turfgrass diseases and keeping key playing surfaces in good condition. The nozzles attached to sprayers – which often cost less than \$15 each – can make all the difference in disease control and ensure that the hundreds or even thousands of dollars spent on each application is not being wasted.

The nozzle type and the amount of water applied effects the performance of fungicides used to control turfgrass diseases. For dollar spot, university scientists examined the effectiveness of different fungicides delivered through five different nozzles producing a range of droplet sizes from extremely coarse to fine. Regardless of the nozzle types evaluated, all fungicides reduced dollar spot compared to an untreated control. However, nozzles that produced the largest water droplet size provided variable and often poor control of dollar spot regardless of the fungicide used. The impact of droplet size on dollar spot control was greater during periods of high disease activity.

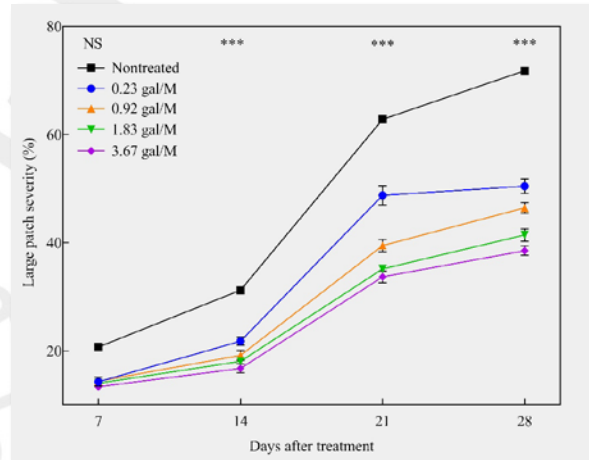
Penn State University researchers examined anthracnose control on annual bluegrass putting greens with three flat-fan nozzles producing either a very coarse, coarse or medium droplet size along with two water-carrier volumes per nozzle – 1 and 2 gallons per 1,000 square feet. The high water volume reduced anthracnose severity with all three water

droplet sizes; however, at the low water volume disease suppression was better with a medium droplet size.

Research from the University of Tennessee evaluated large patch control with spray volumes of 0.23, 0.92, 1.83 and 3.67 gallons per 1,000 square feet. Control of large patch on zoysiagrass was best at high spray volumes. The highest spray volume, 3.67 gallons per 1,000 square feet, resulted in a 20 percent reduction in large patch severity compared to the lowest spray rate volume, 0.23 gallons per 1,000 square feet. The research demonstrated that enhanced control of large patch occurs when fungicides are deposited lower in the turf canopy. The use of high spray volumes resulted in greater penetration of the spray solution and improved fungicidal control of large patch.

It is important to read product labels to find the recommended nozzle type and spray volume for each application. Labels often specify different spray volumes based on where in the turf canopy a product must be placed to target specific diseases. Most products recommend a spray volume between 0.5 and 2.0 gallons per 1,000

square feet. Choosing the correct nozzle and spray volume will improve the effectiveness of any fungicide application.



Large patch severity was reduced in response to various spray water volumes under growth chamber conditions.

Summary Points:

- Nozzle type and droplet size has a greater affect on dollar spot control during periods of high disease pressure.
- Nozzles that produced a large water droplet provided variable and oftentimes poor control of dollar spot regardless of fungicide mode of action.
- High spray volumes—e.g., 2 gallons per 1,000 square feet—reduced anthracnose severity regardless of droplet size tested.
- High spray volumes—e.g., greater than 1 gallon per 1,000 square feet—provided better large patch control on zoysiagrass.
- High spray volumes help deposit fungicides lower in the turfgrass canopy.

Additional Information:

[Dollar Spot Severity as Influenced by Fungicide Mode of Activity and Spray Nozzle](#)

[Influence of Spray Rate Volume and Adjuvant Additives on Fungicidal Control of Large Patch](#)

[Spraying for Success](#)

Fidanza, Michael A., et al. "Evaluation of Water Droplet Size and Water-Carrier Volume on Fungicide Performance for Anthracnose Control on Annual Bluegrass." *International Turfgrass Society Research Journal*, vol. 11, part 1, 2009, pp. 195-205.