How Important is Spray Volume?

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If you asked five different superintendents what their spray volume for fungicides is, you would probably get five different answers. You might even get up to ten, as some superintendents use differing spray volumes for greens and tees and a lower volume for fairways. The lower volume on fairways is usually used to reduce the time required to spray the larger acreage. But, how important is spray volume to the efficacy of fungicides of different topical modes of action? After four years of studies and two different diseases tested, it is probably safe to say that volume has little if any effect on the length of efficacy.

While golf courses in Wisconsin contend with many diseases throughout the year, two diseases are far and away of epidemic proportion, dollar spot and snow mold. These diseases probably account for about 80-90% of most golf course fungicide budgets. For some golf courses snow mold control can account for as much as 50% of the fungicide budget or even can be its own line item. Due to the severity of these diseases and their financial impact, it is important to get the most of your fungicide control. Labor costs are also very important. If a job can be done just as well in half the time, that alternative should be evaluated.

Dollar Spot Control on Greens

During the summers of 1998 and 1999 studies were conducted at the O. J. Noer Facility to evaluate the length of efficacy of nine fungicides at three different volumes for the control of dollar spot on greens. All of the fungicides evaluated carry a label for controlling dollar spot on greens height turf. The three volumes used were 1 gal/M, 2 gal/M, and 4 gal/M. The treatments were applied only once, and the area was inoculated seven days after applications (DAT). Dollar spot ratings were taken every five days from 10 DAT until 65 DAT.

Even though there were differences among chemicals this was not unusual as three topical modes of action were used: contacts, local penetrants, and systemics. Most of the differences were among the modes of action and not within the groups. With the different volumes, there were some slight trends noted, but nothing to a statistical degree.

Based on the results in this study, length of fungicide activity was not impacted by spray volume. But, due to the slight trend of better control at higher volumes it would be beneficial to use volumes around 2 gal/M. Another consideration when determining what volume to use is the label. All fungicide labels have required spray carrier volume requirements. Since the label is the law it is always best to follow these recommendations. In addition, the labels are based on years of evaluations and are not just something taken out of mid-air.

Dollar Spot Control on Fairways

This study was conducted exactly as the green study with the exception of some rate differentials for the chemicals used. The study was conducted during the summers of 2000 and 2001. Inoculations and data collection was also conducted similarly.

The summer of 2000 was an ideal season for this

study as dollar spot was prevalent the entire summer. But, due to the inoculations the evaluations in both years provided similar results. Once again volume did not impact the length of efficacy within any single chemical treatment. Unlike the green study there were no trends noted. It was originally hypothesized that the carrier volume would have more impact due to the taller turf canopy. Yet is had no effect, and one assumption as to why this was is possibly due to the reduced mowing schedule. Height of cut could be a possibility, but Dr. Kussow has observed in the greens management study that higher cut turf usually has more sever dollar spot symptoms.

While this study did prove that length of efficacy was not influenced by spray carrier volume, you still have to take the label into consideration. One possibility to help reduce the time to apply fungicides to fairways is to utilize a mixologist. Yes, yes, it isn't in the dictionary or the spellchecker, but simply put, it is a person prepares the slurry of chemical while someone else is out spraying. This is a very efficient way to spray as the mixologist has a prepared mixture when the spray rig is empty. It usually results in about a five minute turn-around time to have the sprayer back out. In addition, if you are using two spray rigs the mixologist is constantly moving. It also helps the chemicals go into solution better when they are mixed in a five gallon bucket with some water. Water-soluble packets benefit from this method as they are dissolved before they are put into the tank. It is still a good idea to fill the tank half way prior to putting in the solution.

Snow Mold Control on Greens and Fairways

This study was conducted during the winters of 1999-2000 and 2000-2001. They were conducted at Sentryworld in Stevens Point (Fairway Study) and Gateway Golf Club in Land O' Lakes (Green Study). In each trial a similar design was instituted as with the dollar spot studies. However, several commonly used mixtures and their components singly were applied once in the fall and evaluated the following spring. The sites were not inoculated and all infections were from natural populations. Both of these sites were chosen due to the snow molds complex present at the sites. Both *Typhula* snow molds are present in addition to pink snow mold in these locations. They also have extended snow cover with about 100 days in Stevens Point and over 120 days at Land O' Lakes.

This study probably resulted in the most variability. In both studies slight trends were shown with PCNB performing better at higher volumes. Since this study had all three topical modes of action as well as combinations it was interesting that PCNB was the only contact that showed this type of trend.

Snow mold is in a class by itself, because it is the only disease that requires fungicide applications to last from 4 to 6 months. This is one reason that it is important to make applications with the highest possible efficacy. One way to increase the efficacy is by thoroughly coating the entire turfgrass plant including crown of the plant. This is achievable by using higher carrier volumes. Since the course is closed when snow mold applications are applied, time required to make these applications is not as critical as it would be with summer diseases. Spray volumes could then be increased to help ensure good coverage. Also, if there was damage, re-growth in the spring is not as responsive as it would be in the summer.

Conclusion

While these studies did not show any statistical differences among spray carrier volumes, it is always wise to spray at higher volumes as many chemicals did show some improvement in efficacy. But the biggest factor influencing you spray volume is the fungicide label. Since the label is law, it is important to follow it. If the labeling for carrier volume allows rates of 1 gal/M you might consider experimenting with it. It should also be noted that there are no claims that similar results will be shown with other diseases.